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# MMDT3904

## DUAL NPN GENERAL PURPOSE SWITCHING TRANSISTOR

**VOLTAGE** 40 Volt **POWER** 225 mWatt

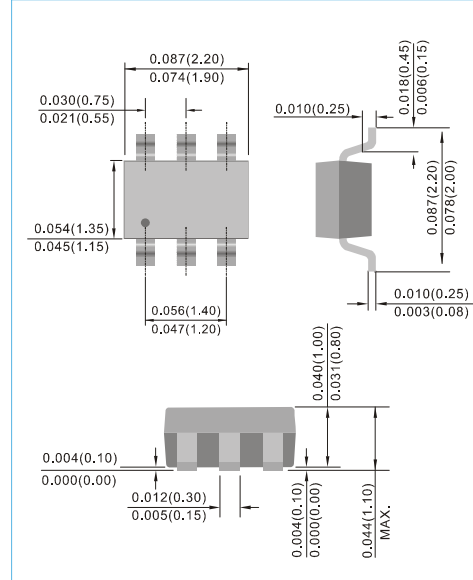
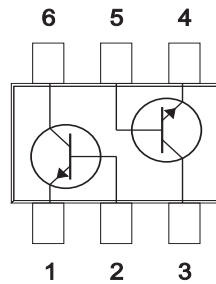
**SOT-363** Unit : inch(mm)

### FEATURES

- NPN epitaxial silicon, planar design
- Collector-emitter voltage  $V_{CE} = 40V$
- Collector current  $I_C = 200mA$
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### MECHANICAL DATA

- Case: SOT-363, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0002 ounces, 0.006 grams
- Marking: S1A



### ABSOLUTE RATINGS

| PARAMETER                      | SYMBOL    | VALUE | UNITS |
|--------------------------------|-----------|-------|-------|
| Collector - Emitter Voltage    | $V_{CEO}$ | 40    | V     |
| Collector - Base Voltage       | $V_{CBO}$ | 60    | V     |
| Emitter - Base Voltage         | $V_{EBO}$ | 6.0   | V     |
| Collector Current - Continuous | $I_C$     | 200   | mA    |

### THERMAL CHARACTERISTICS

| PARAMETER                                | SYMBOL          | VALUE      | UNITS         |
|--|-----------------|------------|---------------|
| Max Power Dissipation (Note 1)           | $P_{TOT}$       | 225        | mW            |
| Thermal Resistance , Junction to Ambient | $R_{\theta JA}$ | 625        | $^{\circ}C/W$ |
| Junction Temperature                     | $T_J$           | -55 to 150 | $^{\circ}C$   |
| Storage Temperature                      | $T_{STG}$       | -55 to 150 | $^{\circ}C$   |

Note 1: Transistor mounted on FR-4 board 70 x 60 x 1mm.



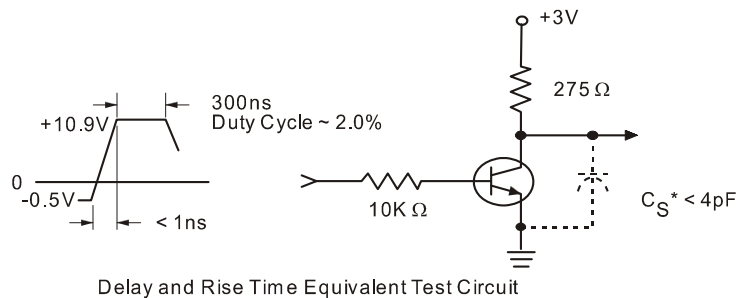
# MMDT3904

## ELECTRICAL CHARACTERISTICS

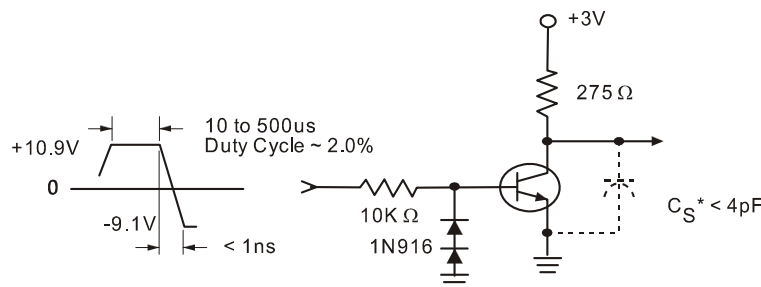
| PARAMETER                                       | SYMBOL        | TEST CONDITION   | MIN.                        | TYP.                  | MAX.                    | UNITS |
|---|---------------|--|-----------------------------|-----------------------|-------------------------|-------|
| Collector - Emitter Breakdown Voltage           | $V_{(BR)CEO}$ | $I_C=1.0mA, I_B=0$   | 40                          | -                     | -                       | V     |
| Collector - Base Breakdown Voltage              | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$   | 60                          | -                     | -                       | V     |
| Emitter - Base Breakdown Voltage                | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$   | 6.0                         | -                     | -                       | V     |
| Base Cutoff Current                             | $I_{BI}$      | $V_{CE}=30V, V_{EB}=3.0V$  | -                           | -                     | 50                      | nA    |
| Collector Cutoff Current                        | $I_{CEX}$     | $V_{CE}=30V, V_{EB}=3.0V$  | -                           | -                     | 50                      | nA    |
| DC Current Gain (Note 2)                        | $h_{FE}$      | $I_C=0.1mA, V_{CE}=1.0V$<br>$I_C=1.0mA, V_{CE}=1.0V$<br>$I_C=10mA, V_{CE}=1.0V$<br>$I_C=50mA, V_{CE}=1.0V$<br>$I_C=100mA, V_{CE}=1.0V$ | 40<br>70<br>100<br>60<br>30 | -<br>-<br>-<br>-<br>- | -<br>-<br>300<br>-<br>- | -     |
| Collector - Emitter Saturation Voltage (Note 2) | $V_{CE(SAT)}$ | $I_C=10mA, I_B=1.0mA$<br>$I_C=50mA, I_B=5.0mA$   | -                           | -                     | 0.2<br>0.3              | V     |
| Base - Emitter Saturation Voltage (Note 2)      | $V_{BE(SAT)}$ | $I_C=10mA, I_B=1.0mA$<br>$I_C=50mA, I_B=5.0mA$   | 0.65<br>-                   | -<br>-                | 0.85<br>0.95            | V     |
| Collector - Base Capacitance                    | $C_{CBO}$     | $V_{CB}=5V, I_E=0, f=1MHz$   | -                           | -                     | 4.0                     | pF    |
| Emitter - Base Capacitance                      | $C_{EBO}$     | $V_{CB}=0.5V, I_C=0, f=1MHz$   | -                           | -                     | 8.0                     | pF    |
| Delay Time                                      | $t_d$         | $V_{CC}=3V, V_{BE}=-0.5V,$<br>$I_C=10mA, I_B=1.0mA$  | -                           | -                     | 35                      | ns    |
| Rise Time                                       | $t_r$         | $V_{CC}=3V, V_{BE}=-0.5V,$<br>$I_C=10mA, I_B=1.0mA$  | -                           | -                     | 35                      | ns    |
| Storage Time                                    | $t_s$         | $V_{CC}=3V, I_C=10mA$<br>$I_{B1}=I_{B2}=1.0mA$   | -                           | -                     | 200                     | ns    |
| Fall Time                                       | $t_f$         | $V_{CC}=3V, I_C=10mA$<br>$I_{B1}=I_{B2}=1.0mA$   | -                           | -                     | 50                      | ns    |

Note 2: Pulse Test: Pulse Width < 300 us, Duty Cycle < 2.0%.

### SWITCHING TIME EQUIVALENT TEST CIRCUITS



Delay and Rise Time Equivalent Test Circuit

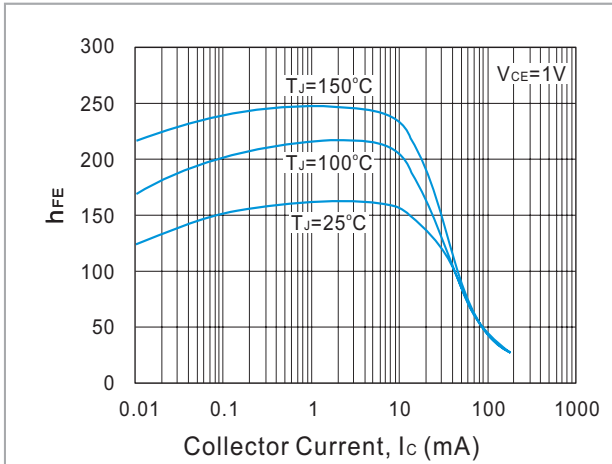


Storage and Fall Time Equivalent Test Circuit

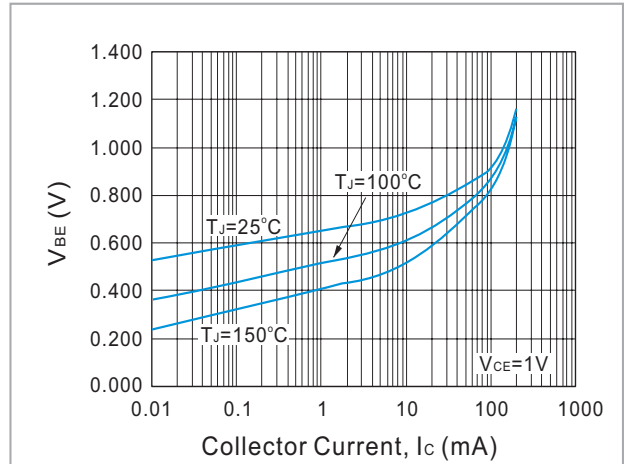


# MMDT3904

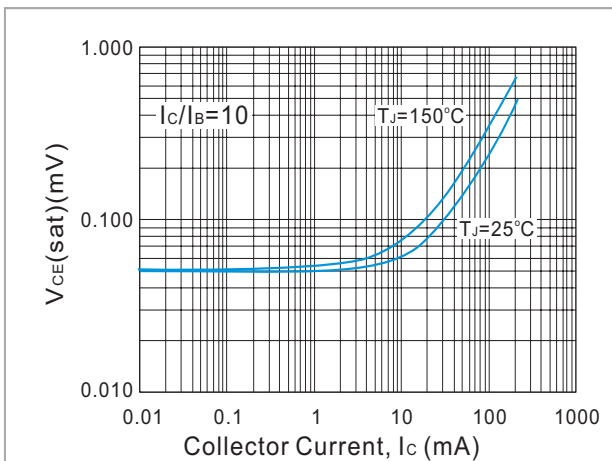
## ELECTRICAL CHARACTERISTICS CURVE



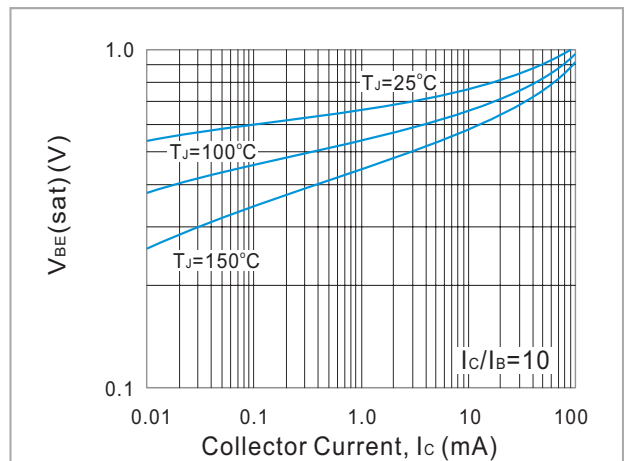
**Fig. 1. Typical  $h_{FE}$  vs. Collector Current**



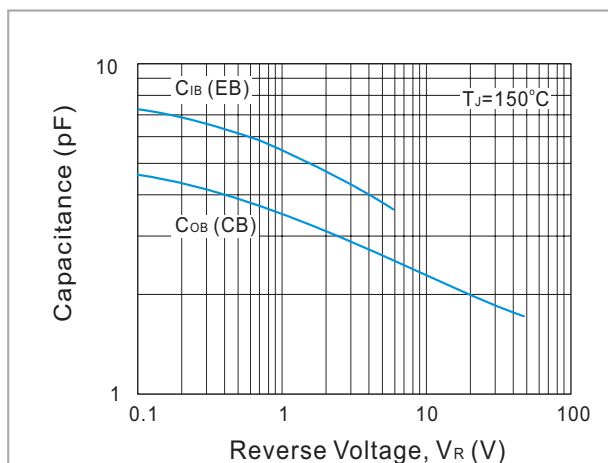
**Fig. 2. Typical  $V_{BE}$  vs. Collector Current**



**Fig. 3. Typical  $V_{CE(sat)}$  vs. Collector Current**



**Fig. 4. Typical  $V_{BE(sat)}$  vs Collector Current**



**Fig. 5. Typical Capacitances vs. Reverse Voltage**

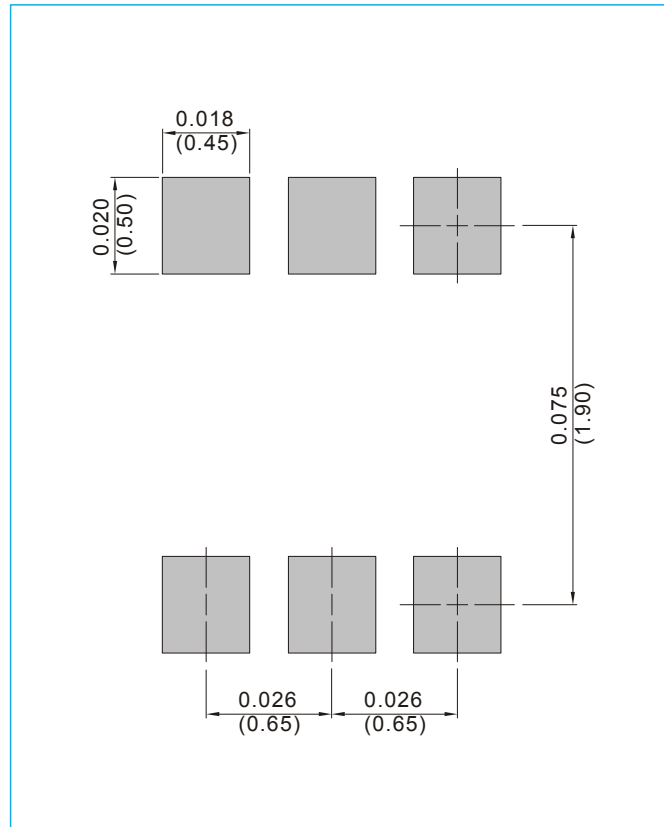


# MMDT3904

## MOUNTING PAD LAYOUT

**SOT-363**

Unit : inch(mm)



## ORDER INFORMATION

- Packing information
  - T/R - 10K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel



# MMDT3904

## Part No\_packing code\_Version

MMDT3904\_R1\_00001

MMDT3904\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



| Packing Code <b>XX</b>               |                      |                                  |                      | Version Code <b>XXXXX</b> |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS                | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | A                    | N/A                              | 0                    | HF                        | 0                    | serial number                         |
| Tape and Reel (T/R)                  | R                    | 7"                               | 1                    | RoHS                      | 1                    | serial number                         |
| Bulk Packing (B/P)                   | B                    | 13"                              | 2                    |                           |                      |                                       |
| Tube Packing (T/P)                   | T                    | 26mm                             | X                    |                           |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | S                    | 52mm                             | Y                    |                           |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | L                    | PANASERT T/B CATHODE UP (PBCU)   | U                    |                           |                      |                                       |
| FORMING                              | F                    | PANASERT T/B CATHODE DOWN (PBCD) | D                    |                           |                      |                                       |



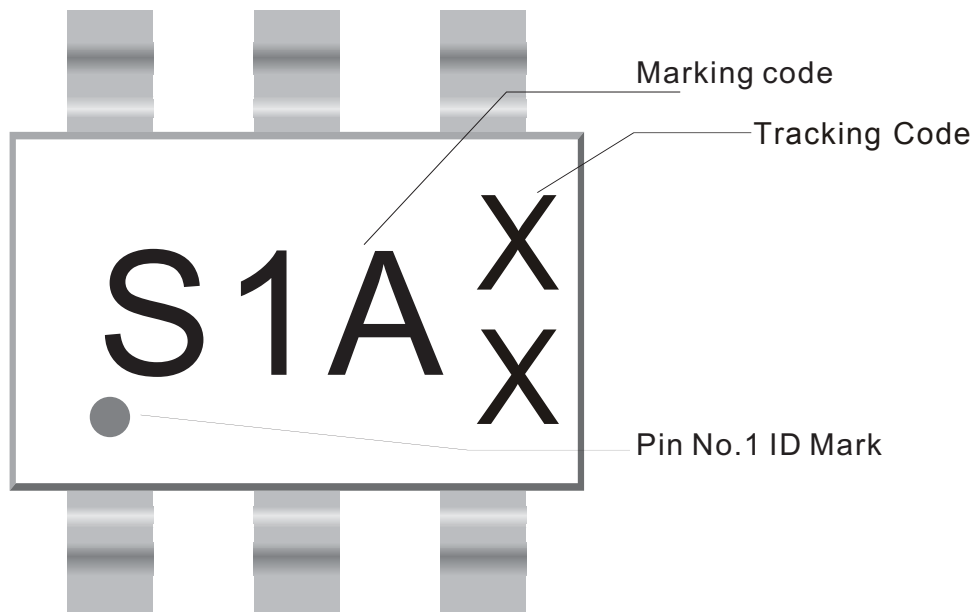
# MMDT3904

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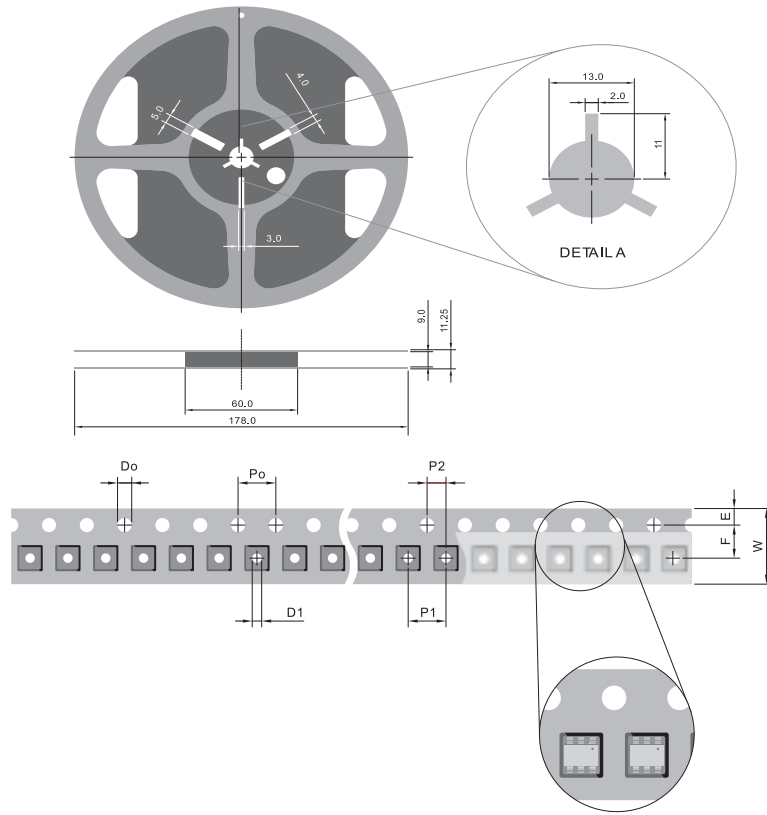
## 2. MARKING







### 3. TAPING



| SYMBOL    | mm(inch)        |                     |
|-----------|-----------------|---------------------|
| TYPE SIZE | 8.00            | (0.315)             |
| Do        | $1.50 + 0.10$   | $(0.060 + 0.004)$   |
| Do        | $1.50 - 0$      | $(0.060 - 0)$       |
| D1        | $1.00 + 0.25$   | $(0.040 + 0.001)$   |
| D1        | $1.00 - 0.10$   | $(0.040 - 0.004)$   |
| E         | $1.75 \pm 0.10$ | $(0.069 \pm 0.004)$ |
| F         | $3.50 \pm 0.05$ | $(0.137 \pm 0.002)$ |
| Po        | $4.00 \pm 0.10$ | $(0.157 \pm 0.004)$ |
| P1        | $4.00 \pm 0.10$ | $(0.157 \pm 0.004)$ |
| P2        | $2.00 \pm 0.05$ | $(0.079 \pm 0.002)$ |
| W         | $8.00 + 0.30$   | $(0.315 + 0.012)$   |
| W         | $8.00 - 0.15$   | $(0.315 - 0.006)$   |

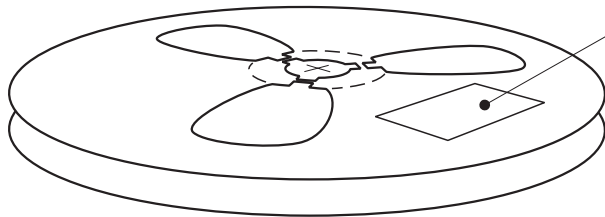
NOTE:

1. There shall be leader of 230 mm minimum which may consist of carrier and or cover tape follower by a minimum of 160 mm of carrier tape sealed with cover tape.
2. There shall be minimum of 160 mm of empty component pockets sealed with cover tape.
3. Devices are packed in accordance with EIA standard EIA-481-A and specifications given above.



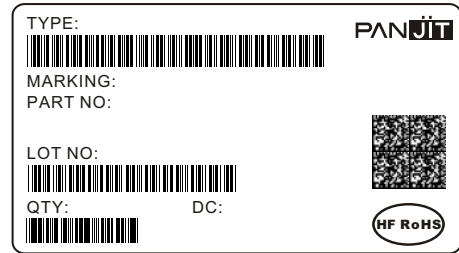
## 4. PACKING

### REEL PACKING

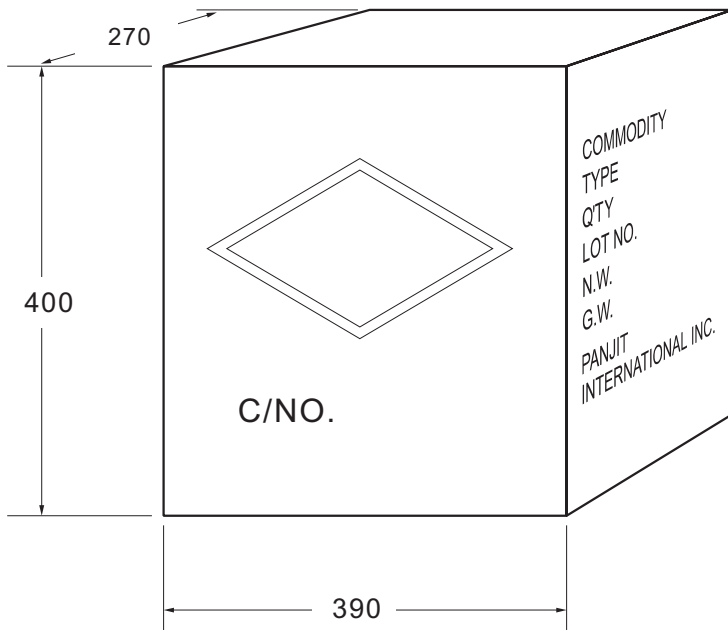


Quantity per Reel: 3,000 pcs

#### LABEL TYPE

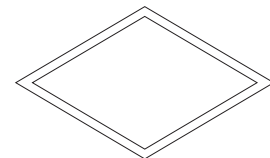


### CARTON



Box Dimensions : mm  
Quantity per Box: 240,000pcs

#### SHIPPING MARK



C/NO.  
PRODUCT COUNTRY

#### SIDE MARK

COMMODITY:  
TYPE:  
Q'TY:  
LOT NO.  
N.W.  
G.W.  
PANJIT  
INTERNATIONAL INC.



**Packing Specifications**

| Package       | Reel Size | Reel   | Component Space | Tape Space | Reel Dia | Carton Size     | Carton  | Approx. Gross Weight |
|---------------|-----------|--------|-----------------|------------|----------|-----------------|---------|----------------------|
|               | (inch)    | (pcs)  | (m/m)           | (m/m)      | (m/m)    | (m/m)           | (EA)    | (Kg)                 |
| Reel Packing  |           |        |                 |            |          |                 |         |                      |
| DFN 0603      | 7         | 10,000 | 2               | 8          | 178      | 390 x 270 x 400 | 800,000 | 9                    |
| DFN 2L        | 7         | 8,000  | 2               | 8          | 178      | 390 x 270 x 400 | 640,000 | 8.6                  |
| DFN 3L        | 7         | 8,000  | 2               | 8          | 178      | 390 x 270 x 400 | 640,000 | 8.6                  |
| DFN1616-8L    | 7         | 5,000  | 4               | 8          | 178      | 390 x 270 x 400 | 400,000 | 10.4                 |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 7.6                  |
| DFN2510-10L   | 7         | 5,000  | 4               | 8          | 178      | 390 x 270 x 400 | 400,000 | 10.5                 |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 6.4                  |
| SOD-923       | 7         | 8,000  | 2               | 8          | 178      | 390 x 270 x 400 | 640,000 | 7.7                  |
| SOD-523       | 7         | 5,000  | 4               | 8          | 178      | 390 x 270 x 400 | 400,000 | 9.1                  |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 5.4                  |
| SOD-323HE     | 7         | 5,000  | 4               | 8          | 178      | 390 x 270 x 400 | 400,000 | 11.9                 |
|               | 13        | 12,000 | 4               | 8          | 178      | 375 x 360 x 230 | 144,000 | 8.3                  |
| SOD-323       | 7         | 5,000  | 4               | 8          | 178      | 390 x 270 x 400 | 400,000 | 9.4                  |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 5.9                  |
| SOD-123HE     | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 12.4                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 8.1                  |
| SOD-123FL     | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 10.6                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.2                  |
| SOD-123       | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 9.9                  |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 6.5                  |
| SOT-563       | 7         | 8,000  | 2               | 8          | 178      | 390 x 270 x 400 | 640,000 | 10.1                 |
|               | 13        | 20,000 | 2               | 8          | 330      | 375 x 360 x 213 | 240,000 | 6.2                  |
| SOT-553       | 7         | 4,000  | 4               | 8          | 178      | 390 x 270 x 400 | 320,000 | 9.4                  |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 5.2                  |
| SOT-543       | 7         | 4,000  | 4               | 8          | 178      | 390 x 270 x 400 | 320,000 | 9.4                  |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 5.2                  |
| SOT-523       | 7         | 4,000  | 4               | 8          | 178      | 390 x 270 x 400 | 320,000 | 10                   |
| SOT-363       | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 10.2                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.1                  |
| SOT-363 (ESD) | 7         | 3,000  | 4               | 8          | 178      | 455 x 270 x 440 | 240,000 | 10                   |
| SOT-353       | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 10                   |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.2                  |
| SOT-23 6L     | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 14.5                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.9                  |
| SOT-23 6L-1   | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 14.5                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.9                  |
| SOT-23 5L     | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 14.5                 |
|               | 13        | 10,000 | 4               | 8          | 330      | 375 x 360 x 230 | 120,000 | 7.9                  |
| SOT-323       | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 7.9                  |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 6.1                  |
| SOT-323 (ESD) | 7         | 3,000  | 4               | 8          | 178      | 455 x 270 x 440 | 240,000 | 9.4                  |
| SOT-23-1      | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 9.8                  |
|               | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 7                    |



### Packing Specifications

| Package                   | Reel Size | Reel   | Component Space | Tape Space | Reel Dia | Carton Size     | Carton  | Approx. Gross Weight |
|---------------------------|-----------|--------|-----------------|------------|----------|-----------------|---------|----------------------|
|                           | (inch)    | (pcs)  | (m/m)           | (m/m)      | (m/m)    | (m/m)           | (EA)    | (Kg)                 |
| Reel Packing              |           |        |                 |            |          |                 |         |                      |
| SOT-23                    | 7         | 3,000  | 4               | 8          | 178      | 390 x 270 x 400 | 240,000 | 9.8                  |
|                           | 13        | 12,000 | 4               | 8          | 330      | 375 x 360 x 230 | 144,000 | 7                    |
| SOT-23 (ESD)              | 7         | 3,000  | 4               | 8          | 178      | 455 x 270 x 440 | 240,000 | 9.9                  |
| SMAF                      | 7         | 3,000  | 4               | 12         | 178      | 390 x 240 x 420 | 120,000 | 10.9                 |
|                           | 13        | 10,000 | 4               | 12         | 330      | 375 x 360 x 422 | 160,000 | 17.1                 |
| SMBF                      | 7         | 1,500  | 8               | 12         | 178      | 390 x 240 x 420 | 60,000  | 9.6                  |
|                           | 13        | 5,000  | 8               | 12         | 330      | 375 x 360 x 422 | 80,000  | 15.6                 |
| SMA(W)                    | 7         | 1,800  | 4               | 12         | 178      | 390 x 240 x 420 | 100,800 | 13                   |
|                           | 13        | 7,500  | 4               | 12         | 330      | 355 x 355 x 400 | 150,000 | 20.4                 |
| SMA/DO-214AC              | 7         | 1,800  | 4               | 12         | 178      | 390 x 240 x 420 | 72,000  | 10                   |
|                           | 13        | 7,500  | 4               | 12         | 330      | 375 x 360 x 390 | 120,000 | 17.4                 |
| SMB/DO-214AA              | 7         | 500    | 8               | 12         | 178      | 390 x 240 x 420 | 20,000  | 6.5                  |
|                           | 13        | 3,000  | 8               | 12         | 330      | 375 x 360 x 390 | 48,000  | 13.2                 |
| SMC/DO-214AB              | 7         | 500    | 8               | 16         | 178      | 390 x 240 x 420 | 15,000  | 8.4                  |
|                           | 13        | 3,000  | 8               | 16         | 330      | 375 x 360 x 390 | 42,000  | 18                   |
| R-1                       | 13        | 5,000  | 5               | 52         | 330      | 340 x 340 x 410 | 25,000  | 7.8                  |
| A-405                     | 13        | 5,000  | 5               | 52         | 330      | 340 x 340 x 410 | 25,000  | 7.79                 |
| DO-41                     | 13        | 5,000  | 5               | 52         | 330      | 340 x 340 x 410 | 25,000  | 11.1                 |
| DO-15                     | 13        | 4,000  | 5               | 52         | 330      | 340 x 340 x 410 | 20,000  | 11.4                 |
| DO-201AD                  | 13        | 1,250  | 10              | 52         | 330      | 340 x 340 x 410 | 6,250   | 9.2                  |
| DO-201AE                  | 13        | 1,250  | 10              | 52         | 330      | 340 x 340 x 410 | 6,250   | 9.2                  |
| P-600                     | 13        | 800    | 10              | 52         | 330      | 340 x 340 x 410 | 4,000   | 9.9                  |
| DO-34                     | 15        | 10,000 | 5               | 52         | 360      | 360 x 360 x 395 | 50,000  | 10.1                 |
| DO-35                     | 15        | 10,000 | 5               | 52         | 360      | 360 x 360 x 395 | 50,000  | 11.2                 |
| DO-41G                    | 15        | 5,000  | 5               | 52         | 360      | 360 x 360 x 395 | 25,000  | 10.9                 |
| MICRO-MELF                | 7         | 2,500  | 4               | -          | 178      | 385 x 380 x 260 | 200,000 | 9.3                  |
|                           | 13        | 10,000 | 4               | -          | 330      | 360 x 360 x 395 | 200,000 | 11.5                 |
| QUADRO-MELF               | 13        | 10,000 | 4               | -          | 330      | 360 x 360 x 395 | 200,000 | 14.9                 |
|                           | 7         | 2,500  | 4               | -          | 178      | 385 x 380 x 260 | 200,000 | 13.3                 |
| MINI-MELF/LL-34           | 7         | 2,500  | 4               | -          | 178      | 385 x 380 x 260 | 200,000 | 12.7                 |
|                           | 13        | 10,000 | 4               | -          | 330      | 360 x 360 x 395 | 200,000 | 14.6                 |
| MELF/DL-41                | 7         | 1,500  | 4               | -          | 178      | 385 x 380 x 260 | 84,000  | 18.3                 |
|                           | 13        | 5,000  | 4               | -          | 330      | 360 x 360 x 395 | 100,000 | 23.5                 |
| MDI                       | 13        | 3,000  | 8               | 12         | 330      | 375 x 360 x 390 | 48,000  | 14.7                 |
| MICRO DIP/TDI             | 7         | 1,000  | 8               | 12         | 178      | 390 x 240 x 420 | 40,000  | 9.5                  |
|                           | 13        | 4,000  | 8               | 12         | 330      | 375 x 360 x 422 | 64,000  | 17                   |
| SDIP                      | 13        | 1,500  | 12              | 16         | 330      | 375 x 360 x 390 | 21,000  | 14.3                 |
| TO-277                    | 13        | 5,000  | 8               | 12         | 330      | 375 x 360 x 422 | 80,000  | 20.6                 |
| TO-277B                   | 13        | 5,000  | 8               | 12         | 330      | 375 x 360 x 390 | 80,000  | 21.8                 |
| TO-252                    | 13        | 3,000  | 8               | 16         | 330      | 375 x 360 x 422 | 42,000  | 18.8                 |
| TO-263/D <sup>2</sup> PAK | 13        | 800    | 16              | 24         | 330      | 375 x 360 x 422 | 6,400   | 14.5                 |



**Packing Specifications**

| Package        | Inner Box Size | Box   | Carton Size     | Carton  | Appox. Gross Weight |
|----------------|----------------|-------|-----------------|---------|---------------------|
|                | (m/m)          | (EA)  | (m/m)           | (EA)    | (Kg)                |
| Bulk Packing   |                |       |                 |         |                     |
| R-1            | 198 x 84 x 20  | 1,000 | 459 x 214 x 256 | 50,000  | 12.7                |
| A-405          | 198 x 84 x 20  | 1,000 | 459 x 214 x 256 | 50,000  | 12.7                |
| DO-41          | 198 x 84 x 20  | 1,000 | 459 x 214 x 256 | 50,000  | 19.3                |
| DO-15          | 200 x 85 x 25  | 1,000 | 459 x 214 x 256 | 40,000  | 20.7                |
| DO-201AD       | 200 x 85 x 40  | 500   | 459 x 214 x 256 | 12,500  | 16                  |
| DO-201AE       | 200 x 85 x 40  | 500   | 495 x 214 x 256 | 12,500  | 16                  |
| P-600          | 208 x 82 x 40  | 100   | 459 x 214 x 256 | 2,500   | 11.3                |
| DO-34          | 240 x 100 x 90 | 2,000 | 406 x 335 x 257 | 120,000 | 14.5                |
| DO-35          | 240 x 100 x 90 | 2,000 | 406 x 335 x 257 | 120,000 | 17.1                |
| DO-41G         | 240 x 100 x 90 | 1,000 | 406 x 335 x 257 | 60,000  | 18.5                |
| TO-220         | 540 x 145 x 85 | 2,000 | 555 x 306 x 200 | 8,000   | 22.9                |
| ITO-220        | 540 x 145 x 85 | 2,000 | 555 x 306 x 200 | 8,000   | 20.5                |
| TO-251AB       | 555 x 145 x 95 | 8,400 | 580 x 310 x 220 | 33,600  | 22                  |
| TO-3PN         | -              | -     | 600x185x230     | 1,800   | 16.4                |
| TO-247AD/TO-3P | -              | -     | 530 x 243 x 100 | 1,500   | 13.9                |
| TO-247S/TO-3PS | -              | -     | 511 x 243 x 107 | 1,500   | 12.2                |
| DIP            | -              | -     | 459 x 214 x 256 | 12,000  | 6.5                 |
| SDIP           | -              | -     | 459 x 214 x 256 | 24,000  | 15.7                |

| Package            | Inner Box Size | Ammo  | Component Space | Tape Space | Carton Size     | Carton  | Appox. Gross Weight |
|--------------------|----------------|-------|-----------------|------------|-----------------|---------|---------------------|
|                    | (m/m)          | (pcs) | (m/m)           | (m/m)      | (m/m)           | (EA)    | (Kg)                |
| Ammunition Packing |                |       |                 |            |                 |         |                     |
| R-1                | 255 x 47 x 73  | 3,000 | 5               | 26         | 310 x 268 x 170 | 36,000  | 6.3                 |
|                    | 255 x 73 x 73  | 3,000 | 5               | 52         | 310 x 268 x 170 | 24,000  | 6.3                 |
|                    | 255 x 73 x 122 | 5,000 | 5               | 52         | 339 x 276 x 274 | 40,000  | 10.3                |
| A-405              | 255 x 47 x 150 | 5,000 | 5               | 26         | 339 x 276 x 330 | 60,000  | 12.4                |
|                    | 255 x 75 x 150 | 5,000 | 5               | 52         | 339 x 276 x 330 | 40,000  | 16                  |
| DO-41              | 255 x 75 x 150 | 5,000 | 5               | 52         | 339 x 276 x 330 | 40,000  | 15.9                |
| DO-15              | 255 x 75 x 150 | 3,000 | 5               | 52         | 339 x 276 x 330 | 24,000  | 13.3                |
| DO-201AD           | 255 x 47 x 122 | 1,250 | 10              | 52         | 339 x 276 x 330 | 10,000  | 13.4                |
| DO-201AE           | 255 x 47 x 122 | 1,250 | 10              | 52         | 339 x 276 x 330 | 10,000  | 13.4                |
| P-600              | 255 x 47 x 122 | 400   | 10              | 52         | 339 x 276 x 330 | 3,200   | 8.1                 |
| DO-34              | 248 x 80 x 48  | 5,000 | 5               | 26         | 406 x 335 x 257 | 150,000 | 14.5                |
|                    | 248 x 80 x 75  | 5,000 | 5               | 52         | 406 x 335 x 257 | 100,000 | 12.7                |
| DO-35              | 248 x 80 x 48  | 5,000 | 5               | 26         | 406 x 335 x 257 | 150,000 | 16.7                |
|                    | 248 x 80 x 75  | 5,000 | 5               | 52         | 406 x 335 x 257 | 100,000 | 15.2                |
| DO-41G             | 248 x 80 x 48  | 2,500 | 5               | 26         | 406 x 335 x 257 | 75,000  | 17.1                |
|                    | 248 x 80 x 75  | 2,500 | 5               | 52         | 406 x 335 x 257 | 50,000  | 15.6                |

# 5.HIGH RELIABILITY TEST SPEC ( MOSFET 、 TRANSISTORS )

Date : 2010.07.05 rev.01

| NO. | TEST ITEM   | TEST CONDITION  | REFERENCED DOCUMENT                          | LOT QUALITY LEVEL                                    |
|-----|---|---|--|--|
| 1   | TEMPERATURE CYCLING (T.C.T)<br>溫度循環試驗               | Ta = -55+0°C / -10°C 10min(Min)<br>Ta = +150+15°C / -0°C 10min(Min)<br>FOR 20CYCLES   | MIL-STD-750D<br>METHOD-1051.5<br>Condition G | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |
| 2   | HIGH TEMPERATURE STORAGE LIFE (H.T.S.L)<br>高溫儲存壽命試驗 | Ta=Storage Temperature Range<br>(device specified maximum temperature)  | MIL-STD-750D<br>METHOD-1032.2                | LTPD 10<br>S.S = 22<br>ACCEPT FOR 0<br>FAILURE ONLY. |
| 3   | SOLDERABILITY TEST<br>錫錫性試驗                         | Temperature of Solder<br>TEMPERATURE OF SOLDER POT=245 +/- 5°C<br>TIME FOR DIPPING IN SOLDER=5 +/- 0.5 SEC<br>DIPPING DEPTH=0.05inch max from the body<br>FOR ONE CYCLE | MIL-STD-750D<br>METHOD-2026.10               | LTPD 7<br>S.S=32<br>ACCEPT FOR 0<br>FAILURE ONLY.    |
| 4   | HIGH TEMPERATURE REVERSE BIAS (H.T.R.B)<br>高溫逆向偏壓   | Tj ≤ Tj max<br>VR=0.8VR(CUSTOMER SPEC.) DC supply   | MIL-STD-750D<br>METHOD-1038.3                | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |
| 5   | THERMAL SHOCK (T.S.T)<br>冷熱衝擊試驗                     | HOT TANK Ta=100+10/-2°C t= 5min<br>COLD TANK Ta=0+2/-10°C t= 5min<br>15 CYCLES<br>TIME BETWEEN TRANSFERRING<br>DO NOT EXCEED 10 SEC                                     | MIL-STD-750D<br>METHOD 1056.7                | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |
| 6   | PRESSURE COOKER (P.C.T)<br>壓力鍋試驗                    | Ta=121°C<br>P=29.7psia / 205kPa or 2.088kg/cm <sup>2</sup><br>Relative Humidity = 100%  | JEDEC<br>JESD22-A102-C                       | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |
| 7   | HUMIDITY<br>恆溫濕試驗                                   | Ta=85+/-2°C<br>RH=85+/-5%   | EIAJ ED-4701<br>METHOD 103                   | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |
| 8   | SOLDER RESISTANCE<br>錫錫耐熱性試驗                        | TEMPERATURE OF SOLDER POT=260 +/- 5°C<br>TIME FOR DIPPING IN SOLDER=10 + 2 / - 0 SEC<br>DIPPING DEPTH=1.57 +/- 0.79mm<br>FROM THE BODY<br>FOR ONE CYCLE                 | MIL-STD-750D<br>METHOD 2031.2                | LTPD 10<br>S.S=22<br>ACCEPT FOR 0<br>FAILURE ONLY.   |

APPROVE SHEET ISSUE DATE : 12/24/2014

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