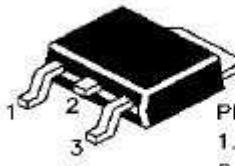


NPN SILICON PLASTIC POWER TRANSISTOR
MJD13003


PIN CONFIGURATION
 1. BASE
 2. COLLECTOR
 3. Emitter

**DPAK (TO-252)
 Plastic Package**
Designed for High Voltage, High Speed Power Switching Inductive Circuits Applications
ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	V_{CEO}	400	V
Collector Emitter Voltage	V_{CEV}	700	V
Emitter Base Voltage	V_{EBO}	9.0	V
Collector Current Continuous Peak	I_C $*I_{CM}$	1.5 3.0	A A
Base Current Continuous Peak	I_B $*I_{BM}$	0.75 1.5	A A
Emitter Current Continuous Peak	I_E $*I_{EM}$	2.25 4.5	A A
Total Power Dissipation at $T_a=25^\circ\text{C}$ Derate Above 25°C	$**P_D$	1.56 0.0125	W W/ $^\circ\text{C}$
Total Power Dissipation at $T_c=25^\circ\text{C}$ Derate Above 25°C	P_D	15 0.12	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_j, T_{stg}	- 65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Junction to Case	$R_{th(j-c)}$	8.33	$^\circ\text{C/W}$
Junction to Ambient in free air	$**R_{th(j-a)}$	80	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes	T_L	260	$^\circ\text{C}$

 *Pulse Test:- Pulse Width=5ms, Duty Cycle \leq 10%

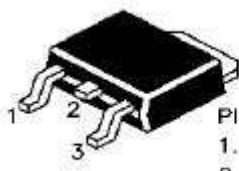
** When Surface Mounted on Minimum Pad Sizes Recommended

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$	400			V
Collector Cut Off Current	I_{CEV}	$V_{CEV}=\text{Rated Value}, V_{BE(\text{off})}=1.5\text{V}$ $V_{CEV}=\text{Rated Value}, V_{BE(\text{off})}=1.5\text{V}, T_c=100^\circ\text{C}$			0.1 2.0	mA
Emitter Cut Off Current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			1.0	mA
DC Current Gain	$***h_{FE}$	$I_C=0.5\text{A}, V_{CE}=2\text{V}$ $I_C=1\text{A}, V_{CE}=2\text{V}$	8.0 5.0	40 25		

 ***Pulse Test:- Pulse Width \leq 300 μs , Duty Cycle \leq 2%

MJD13003Rev160506E



PIN CONFIGURATION
 1. BASE
 2. COLLECTOR
 3. Emitter

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Saturation Voltage	*** $V_{CE(\text{sat})}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$ $I_C=1.5\text{A}, I_B=0.5\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}, T_c=100^\circ\text{C}$			0.5 1.0 3.0 1.0	V V V V
Base Emitter Saturation Voltage	*** $V_{BE(\text{sat})}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}, T_c=100^\circ\text{C}$			1.0 1.2 1.1	V V V

DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Current Gain Bandwidth Product	f_T	$I_C=100\text{mA}, V_{CE}=10\text{V}, f=1\text{MHz}$	4.0			MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0\text{V}, f=0.1\text{MHz}$		21		pF

Resistive Load

Delay Time	t_d	$V_{CC}=125\text{V}, I_C=1\text{A}, I_{B1}=I_{B2}=0.2\text{A}, t_p=25\mu\text{s},$ Duty Cycle 1%			0.1	μs
Rise Time	t_r				1.0	μs
Storage Time	t_s				4.0	μs
Fall Time	t_f				0.7	μs

Inductive Load, Clamped

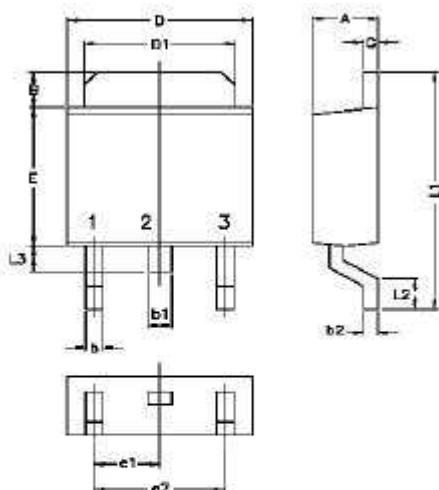
Voltage Storage Time	t_{sv}	$V_{\text{Clamp}}=300\text{V}, I_C=1\text{A}, I_{B1}=0.2\text{A}, V_{BE(\text{off})}=5\text{V},$ $T_c=100^\circ\text{C}$			4.00	μs
Crossover Time	t_c				0.75	μs
Fall Time	t_{fi}				0.15	μs

Second Breakdown Characteristics

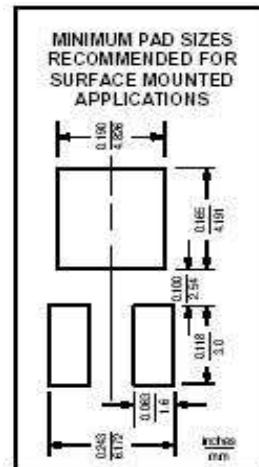
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Second Breakdown Collector Current with Base Forward Biased	$I_{S/b}$	$V_{CE}=100\text{V}, t=1.0\text{ sec}$	0.15			A

MARKING	CDIL MJD13003 XY MX	
XY= Date Code		

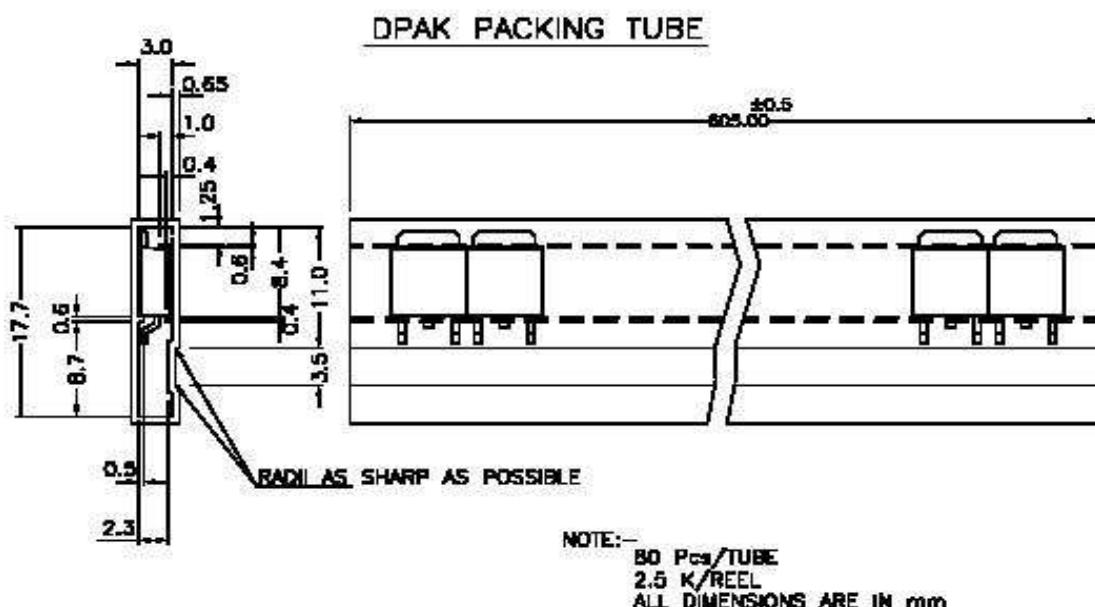
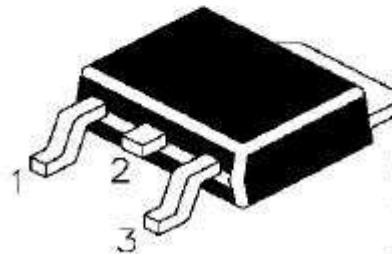
***Pulse Test:- Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

DPAK PACKAGE OUTLINE DIMENSIONS

DIM	MIN.	MAX.
A	2.20	2.40
B	1.30	1.50
b	0.55	0.65
b1	0.75	0.85
b2	0.46	0.56
C	0.46	0.56
D	6.40	6.60
D1	5.20	5.40
E	5.40	5.60
e1	2.25	2.35
e2	4.50	4.70
L1	9.25	9.75
L2	0.5	-
L3	0.90	1.10

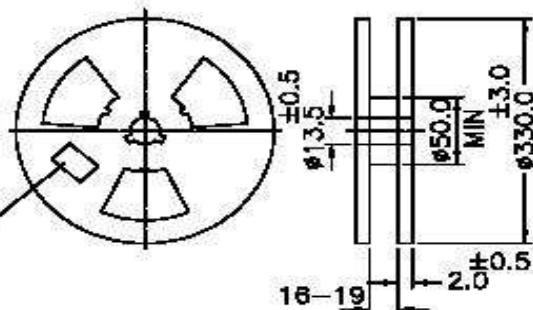


ALL DIMENSIONS ARE IN mm



DPAK TAPE & REEL SPECIFICATION

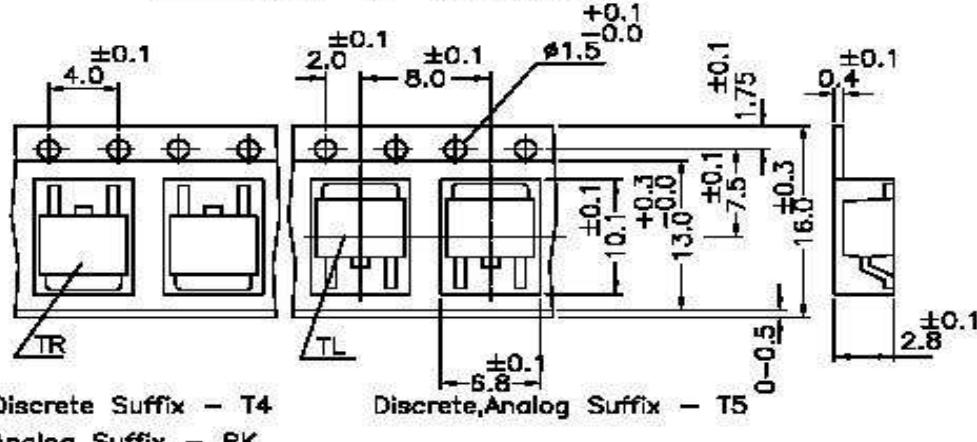
Identification Label
Part Number
Date Code
Quantity



ALL DIMENSIONS ARE IN mm
REEL Ø 330 mm (13")
No of Device 2500

TAPE & REEL

→ De-reeling direction



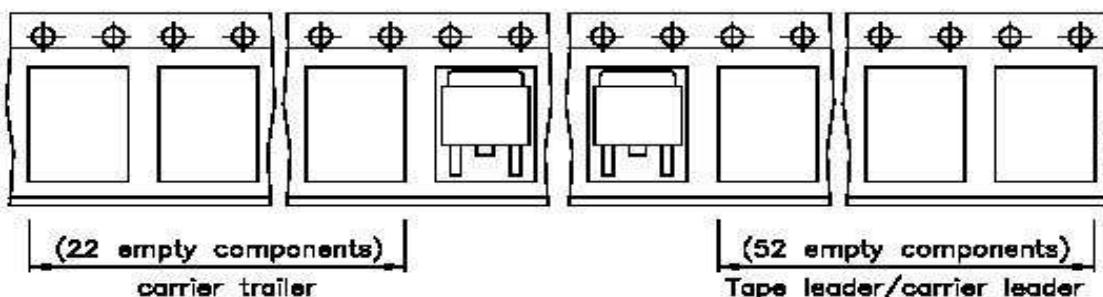
Discrete Suffix - T4
Analog Suffix - RK

Discrete, Analog Suffix - T5

Notes:-

A maximum of three consecutive components may be missing. Provided this gap is followed by six consecutive components.

→ De-reeling direction



(22 empty components)
carrier trailer

(52 empty components)
Tape leader/carrier leader

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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