



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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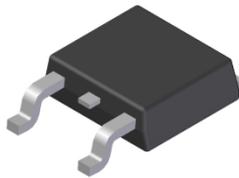
Features

- $BV_{CEO} > 80V$
- $I_C = 8A$ Continuous Collector Current
- $I_{CM} = 16A$ Peak Pulse Current
- Ideal for Power Switching or Amplification Applications
- Complementary PNP Type: NK-MJD45H11Q

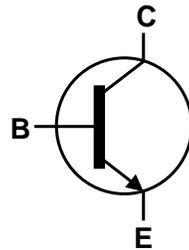
Mechanical Data

- Package: TO252 (DPAK)
- Package Material: Molded Plastic, "Green" Molding Compound
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per
MIL-STD-202, Method 208③
- Weight: 0.34 grams (Approximate)

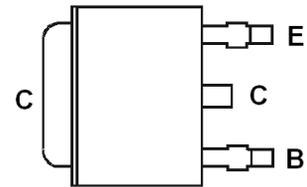
TO252 (DPAK)



Top View



Device Schematic



Pin Out Configuration
Top View

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	100	V
Collector-Emitter Voltage	V _{CEO}	80	V
Emitter-Base Voltage	V _{EB0}	7	V
Continuous Collector Current	I _C	8	A
Peak Pulse Collector Current	I _{CM}	16	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5)	2.7
		(Note 6)	2.4
		(Note 7)	1.5
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 5)	46
		(Note 6)	52
		(Note 7)	83
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Charged Device Model	ESD CDM	1,000	V	C3

- Notes:
5. For a device mounted with the exposed collector pad on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except mounted on 25mm x 25mm 1oz copper.
 7. Same as note (5), except mounted on minimum recommended pad (MRP) layout.
 8. Refer to JEDEC specification JS-001-2017 and JS-002-2022.

Thermal Characteristics

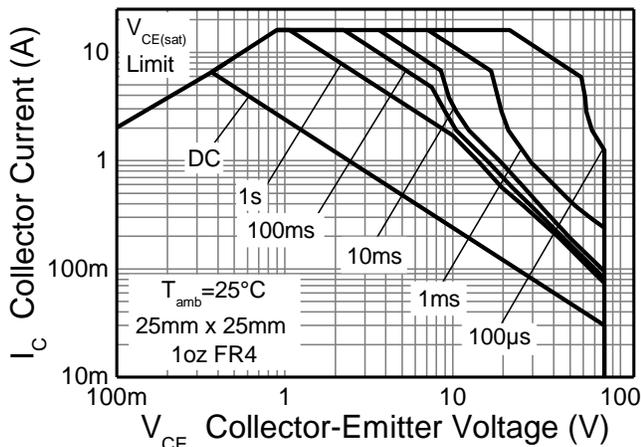


Figure 1. Safe Operating Area

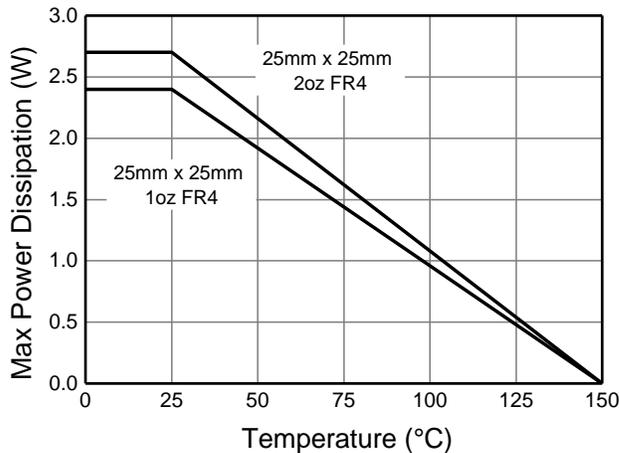


Figure 2. Derating Curve

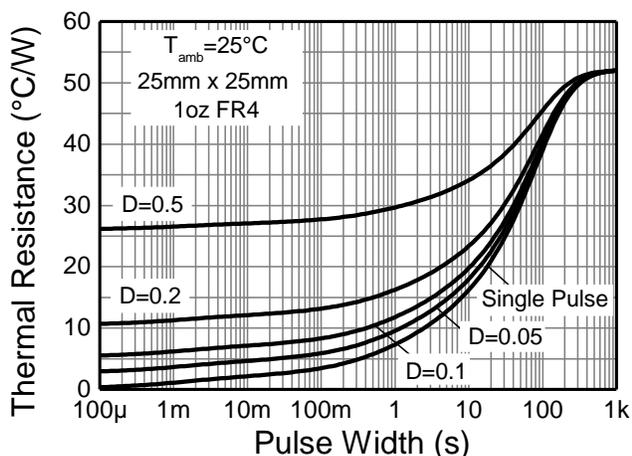


Figure 3. Transient Thermal Impedance

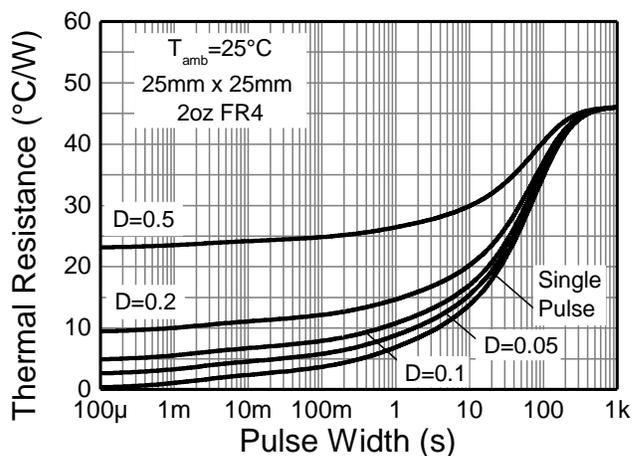


Figure 4. Transient Thermal Impedance

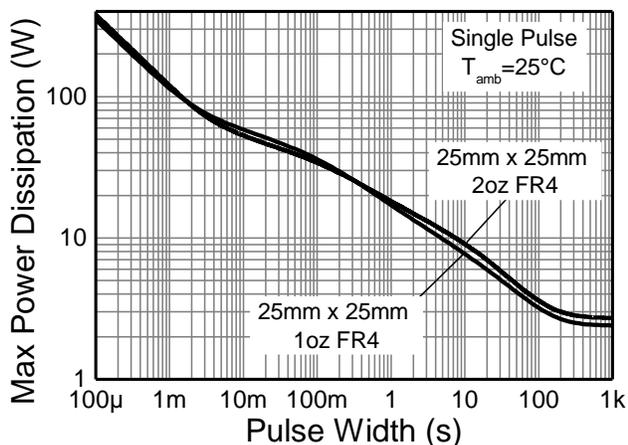


Figure 5. Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	100	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	80	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector Cut-off Current	I _{CES}	—	—	1	μA	V _{CE} = 80V
Collector-Base Cut-off Current	I _{CBO}	—	—	100	nA	V _{CB} = 80V
Emitter Cut-off Current	I _{EBO}	—	—	1	μA	V _{EB} = 6V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(sat)}	—	—	1	V	I _C = 8A, I _B = 400mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(sat)}	—	—	1.5	V	I _C = 8A, I _B = 800mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	—	—	2	V	I _C = 6A, V _{CE} = 4V
DC Current Gain (Note 9)	h _{FE}	60 40	—	—	—	V _{CE} = 1V, I _C = 2A V _{CE} = 1V, I _C = 4A
Current Gain-Bandwidth Product	f _T	3	—	—	MHz	V _{CE} = 10V, I _C = 0.5A, f = 100MHz
Output Capacitance	C _{obo}	—	35	—	pF	V _{CB} = 10V, f = 1MHz
Input Capacitance	C _{ibo}	—	930	—	pF	V _{EB} = 0.5V, f = 1MHz
Delay Time	t _d	—	15	—	ns	I _C = 5A, V _{CC} = 12.5V I _{B1} = -I _{B2} = 500mA
Rise Time	t _r	—	170	—	ns	
Storage Time	t _s	—	290	—	ns	
Fall Time	t _f	—	40	—	ns	

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

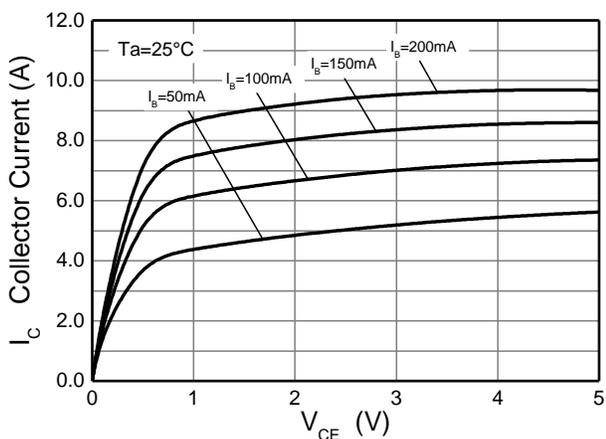


Figure 6. I_C v V_{CE}

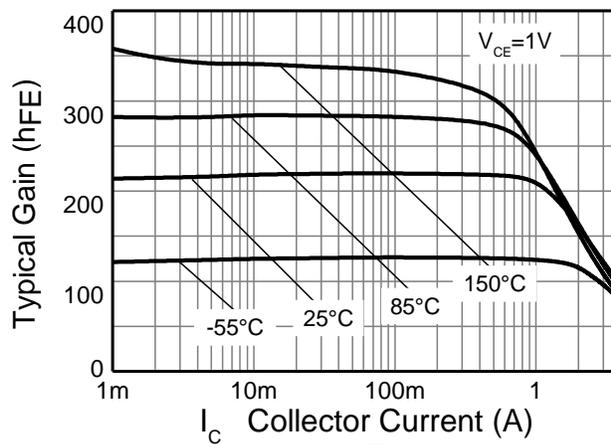


Figure 7. h_{FE} v I_C

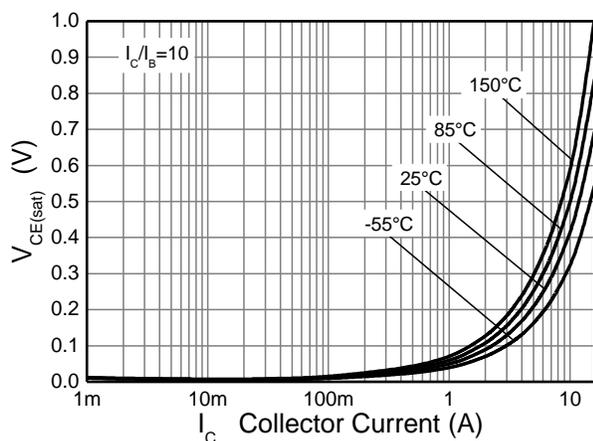


Figure 8. $V_{CE(sat)}$ v I_C

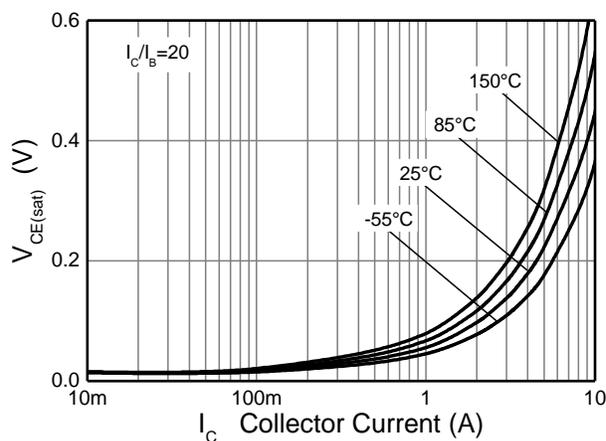


Figure 9. $V_{CE(sat)}$ v I_C

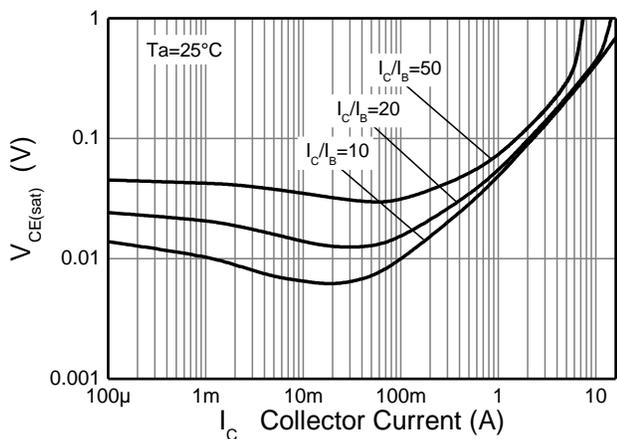


Figure 10. $V_{CE(sat)}$ v I_C

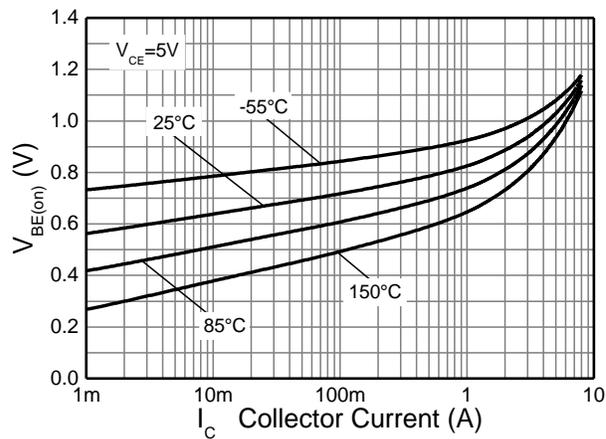


Figure 11. $V_{BE(on)}$ v I_C

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

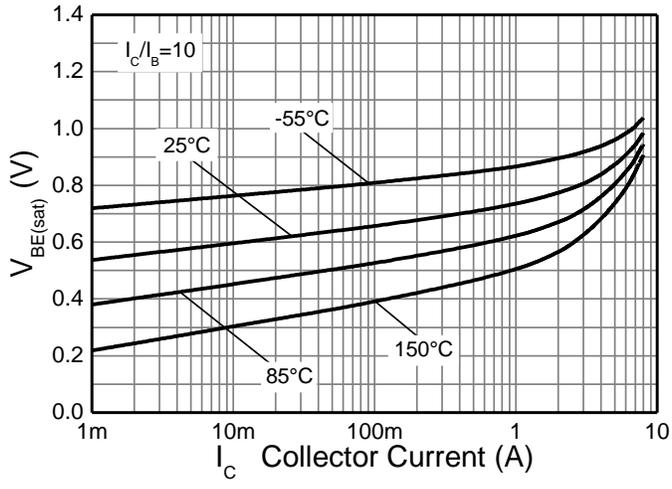
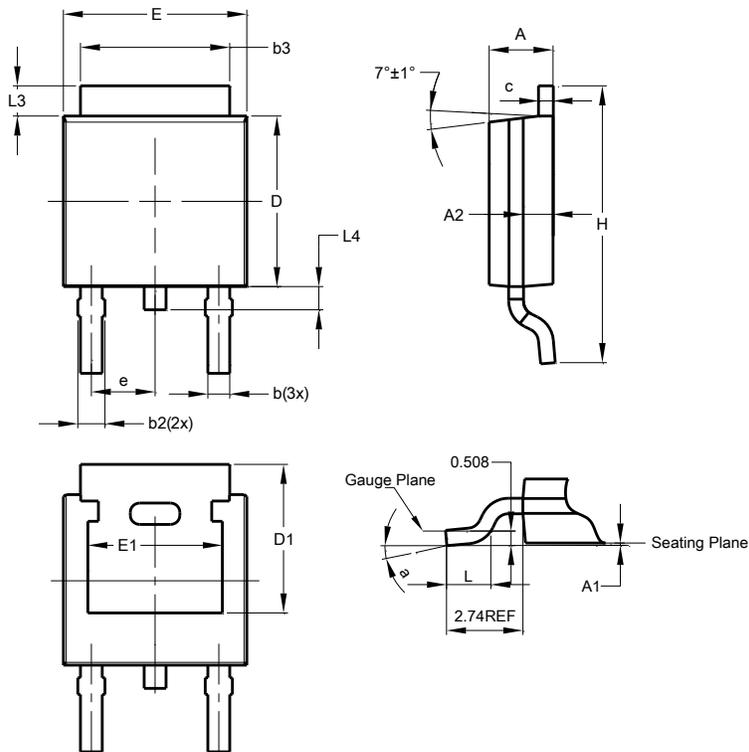


Figure 12. $V_{BE(sat)}$ v I_C

Package Outline Dimensions

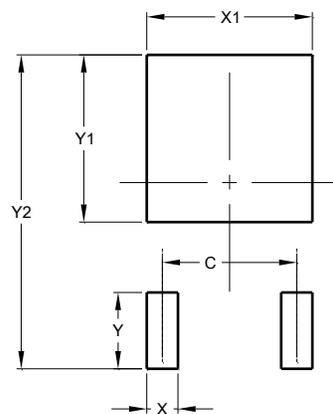
TO252 (DPAK)



TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.50	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	--	--
e	2.286 BSC		
E	6.45	6.70	6.58
E1	4.32	--	--
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	--
All Dimensions in mm			

Suggested Pad Layout

TO252 (DPAK)



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700