



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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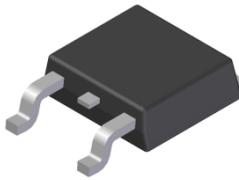
Features

- $BV_{CEO} > -100V$
- $I_C = -3A$ high Continuous Collector Current
- $I_{CM} = -5A$ Peak Pulse Current
- Ideal for Power Switching or Amplification Applications
- Complementary NPN Type: NK-MJD31C

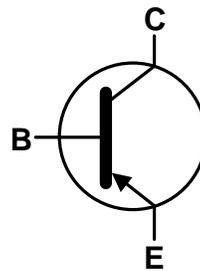
Mechanical Data

- Case: TO252 (DPAK)
- Case 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 208 ③
- Weight: 0.34 grams (Approximate)

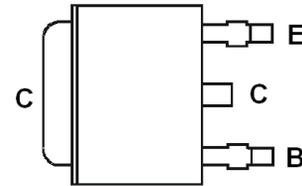
TO252 (DPAK)



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 _{CBO}	-100	V
Collector-Emitter Voltage	V _{CEO}	-100	V
Emitter-Base Voltage	V _{EBO}	-6	V
Continuous Collector Current	I _C	-3	A
Peak Pulse Collector Current	I _{CM}	-5	A
Continuous Base Current	I _B	-1	A
Power Dissipation	P _D	15	W

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

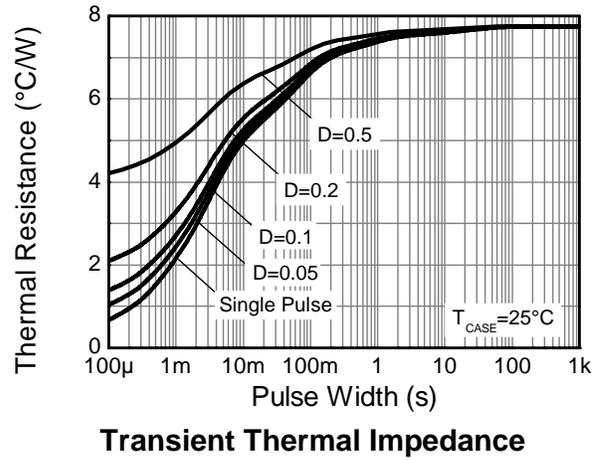
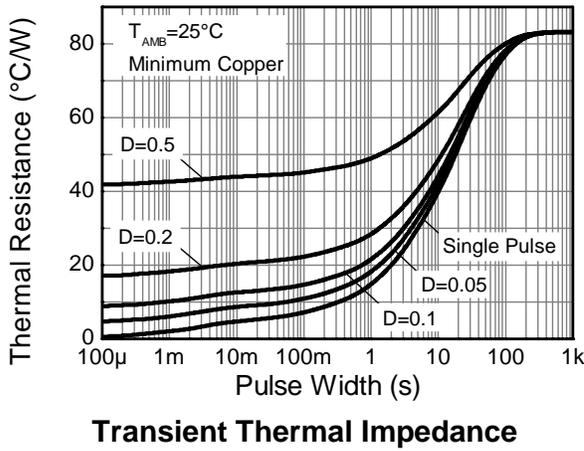
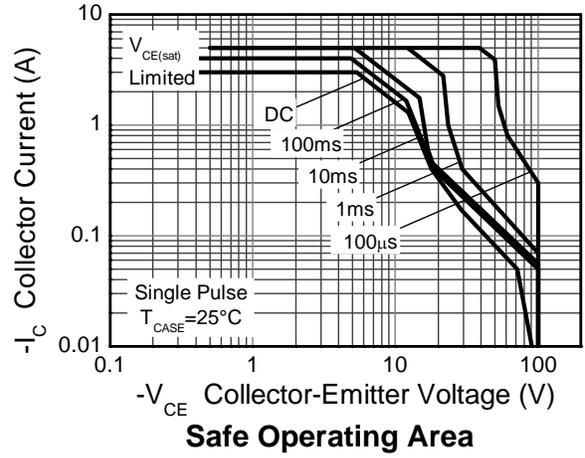
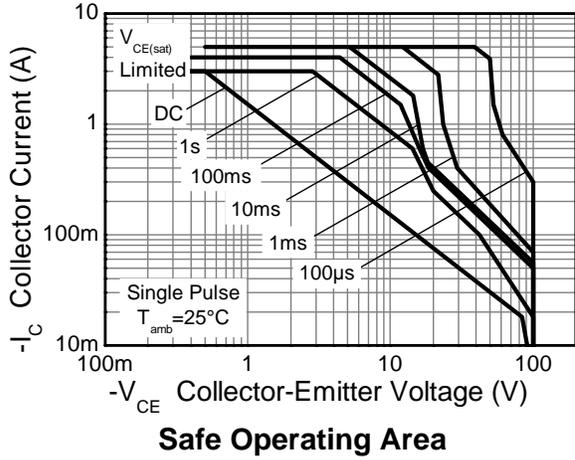
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5)	3.9
		(Note 6)	2.1
		(Note 7)	1.6
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 5)	32
		(Note 6)	59
		(Note 7)	80
Thermal Resistance, Junction to Leads	R _{θJL}	3.6	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	

ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the exposed collector pad on 50mm x 50mm 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.
 - Same as note (5), except mounted on 25mm x 25mm 1oz copper.
 - Same as note (5), except mounted on minimum recommended pad (MRP) layout.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics



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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	-100	—	—	V	I _C = -30mA, I _B = 0
Collector Cut-off Current	I _{CEO}	—	—	-1	μA	V _{CB} = -60V, I _B = 0
Collector Cut-off Current	I _{CES}	—	—	-1	μA	V _{CE} = -100V, V _{EB} = 0
Emitter Cut-off Current	I _{EBO}	—	—	-1	μA	V _{EB} = -5V, I _C = 0
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	—	—	-1.2	V	I _C = -3.0A, I _B = -375mA
Base-Emitter Turn-On Voltage (Note 10)	V _{BE(on)}	—	—	-1.8	V	I _C = -3A, V _{CE} = -4V
DC Current Gain (Note 10)	h _{FE}	25 10	—	— 50	—	V _{CE} = -4V, I _C = -1A V _{CE} = -4V, I _C = -3A
Current Signal Current Gain	H _{fe}	20	—	—	—	V _{CE} = -10V, I _C = -0.5A, f = 1KHz
Current Gain-Bandwidth Product	f _T	3.0	—	—	MHz	I _C = -500mA, V _{CE} = -10V, f = 1MHz

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

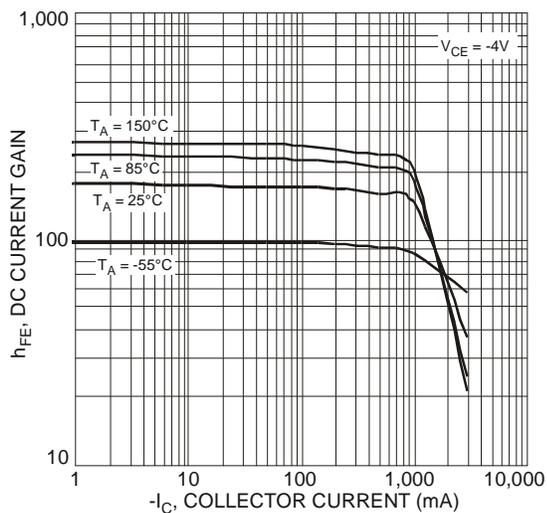


Figure 1 Typical DC Current Gain vs. Collector Current

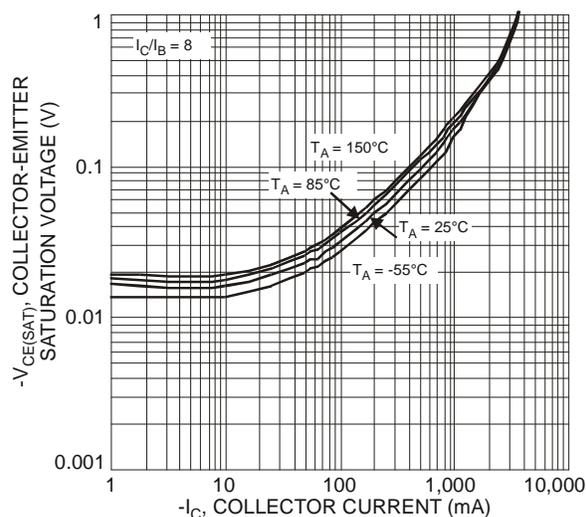


Figure 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

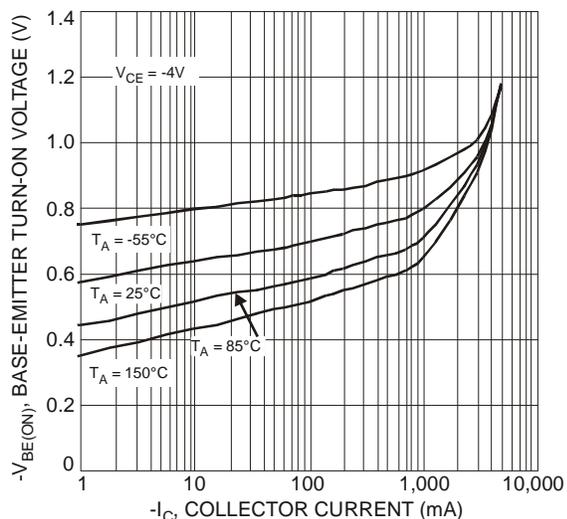


Figure 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

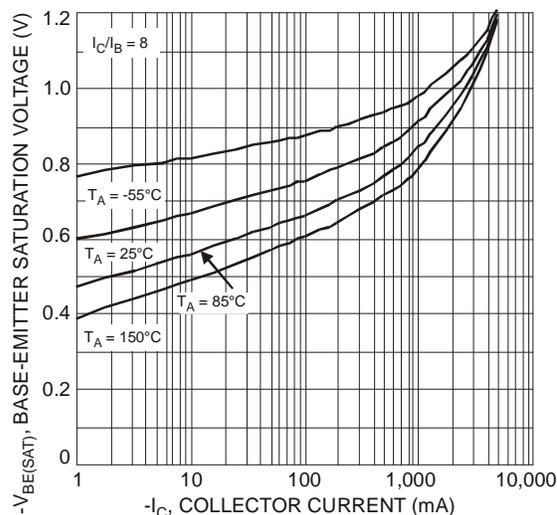


Figure 4 Typical Base-Emitter Saturation Voltage vs. Collector Current

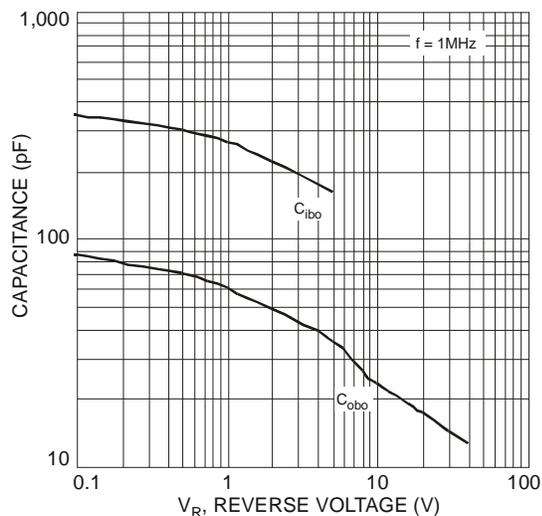
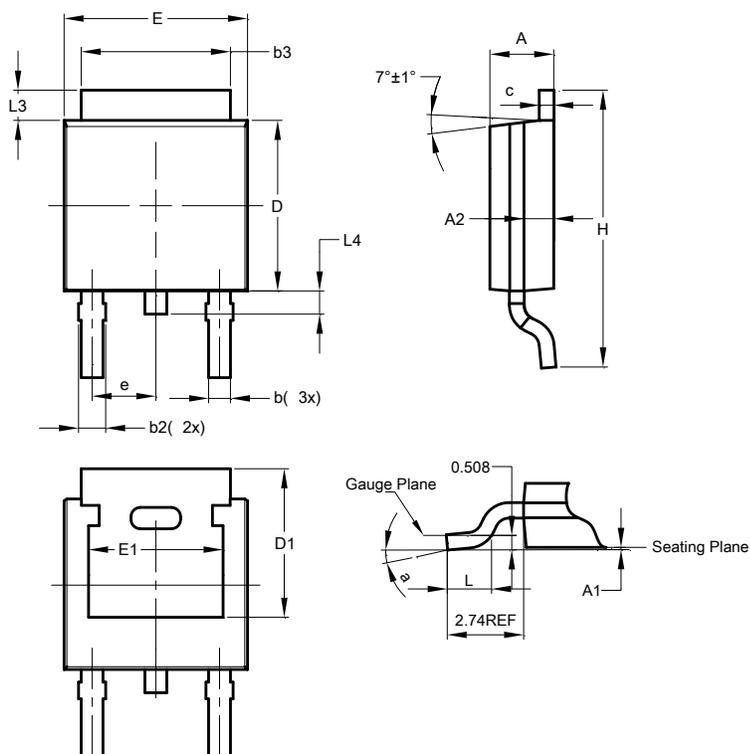


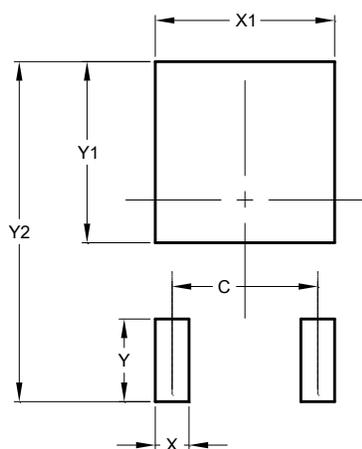
Figure 5 Typical Capacitance Characteristics

Package Outline Dimensions



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	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
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



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