优尚

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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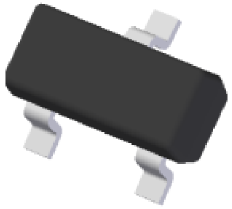
Features

- $BV_{CEO} > 300V$
- Ideal for Medium Power Amplification and Switching
- Complementary PNP Type: DIODES™ NK-MMBTA92

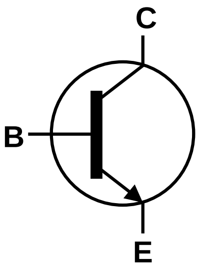
Mechanical Data

- Package: SOT23
- 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 208 e3
- Weight: 0.008 grams (Approximate)

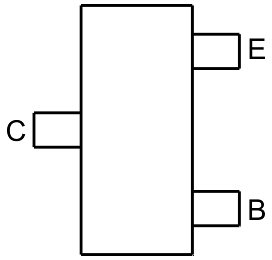
SOT23



Top View



Device Symbol



Top View
Pin-Out

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current — Continuous	I_C	500	mA

Thermal Characteristics (@T$_A$ = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 6)

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:
5. For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics

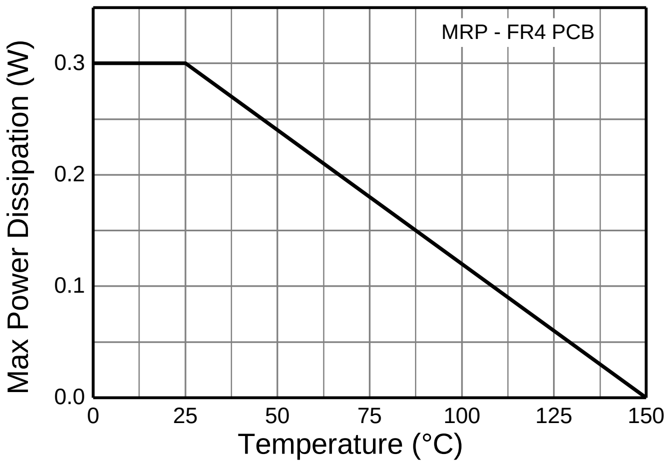


Figure 1. Derating Curve

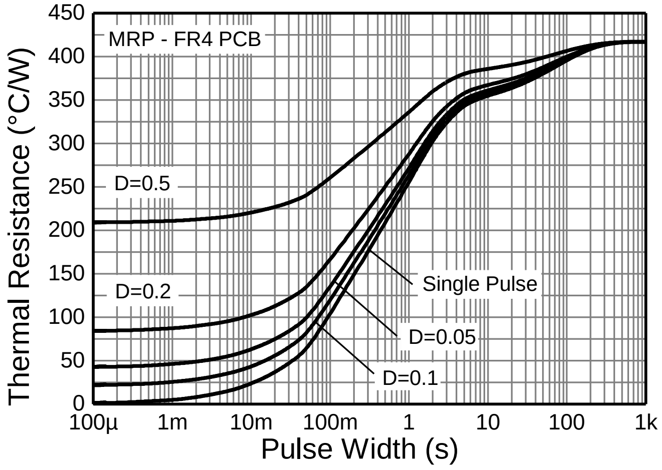


Figure 2. Transient Thermal Impedance

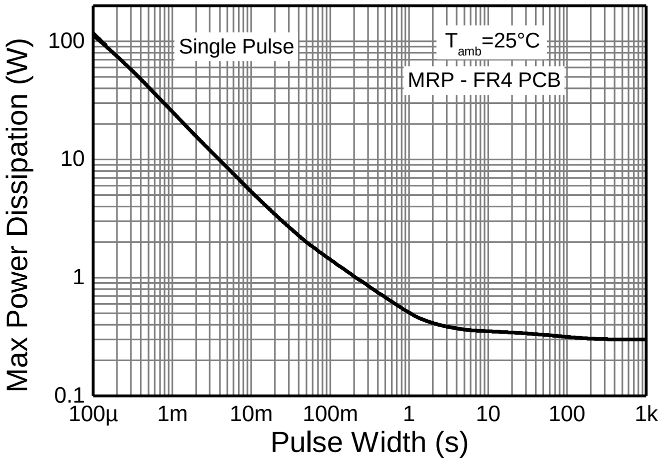


Figure 3. Pulse Power Dissipation

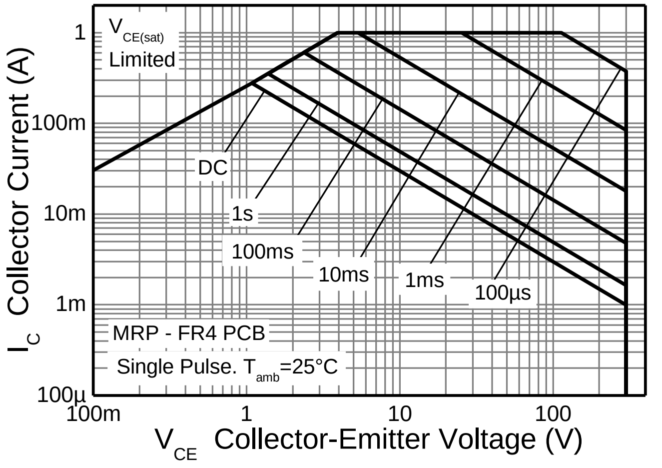


Figure 4. Safe Operating Area

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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)					
Collector-Base Breakdown Voltage	BV_{CBO}	300	—	V	I_C = 100µA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	300	—	V	I_C = 1.0mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	6.0	—	V	I_E = 100µA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	100	nA	V_{CB} = 200V, I_E = 0
Emitter Cut-Off Current	I_{EBO}	—	100	nA	V_{EB} = 6.0V, I_C = 0
ON CHARACTERISTICS (Note 7)					
DC Current Gain	h_{FE}	25 40 40	— — —	—	I_C = 1.0mA, V_{CE} = 10V I_C = 10mA, V_{CE} = 10V I_C = 30mA, V_{CE} = 10V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.5	V	I_C = 20mA, I_B = 2.0mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	0.9	V	I_C = 20mA, I_B = 2.0mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{cb}	—	3.0	pF	V_{CB} = 20V, f = 1.0MHz, I_E = 0
Current Gain-Bandwidth Product	f_T	50	—	MHz	V_{CE} = 20V, I_C = 10mA, f = 100MHz

Note: 7. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

Typical Electrical Characteristics

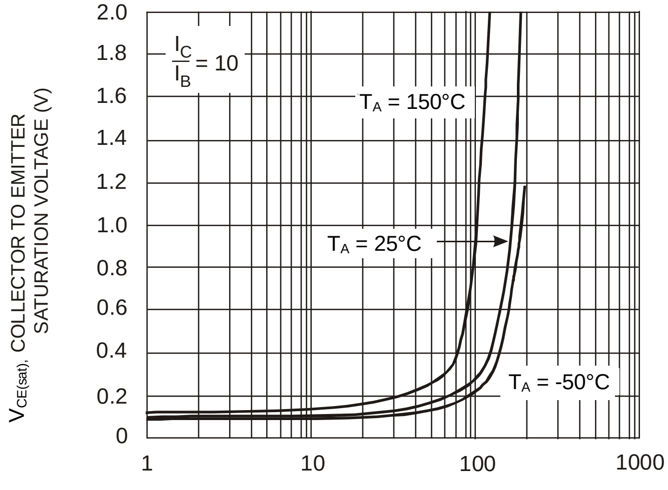


Figure 5. Collector Emitter Saturation Voltage vs. Collector Current

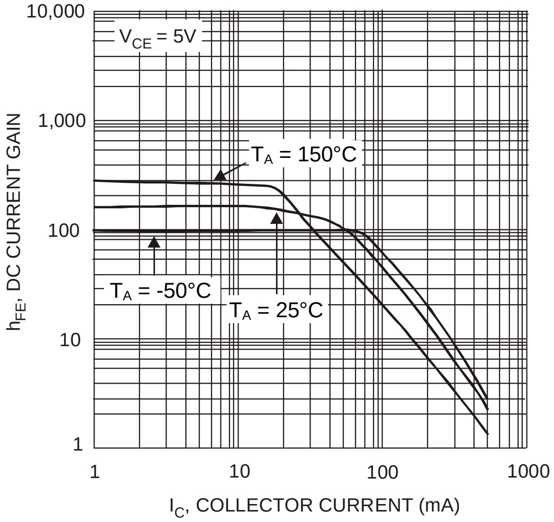


Figure 6. DC Current Gain vs Collector Current

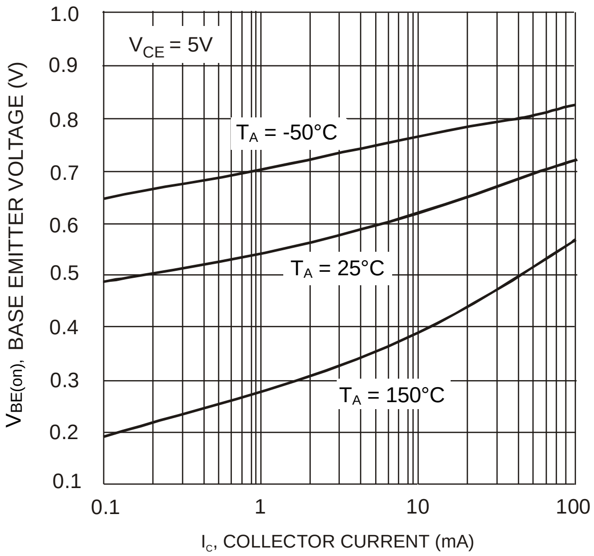


Figure 7. Base Emitter Voltage vs Collector Current

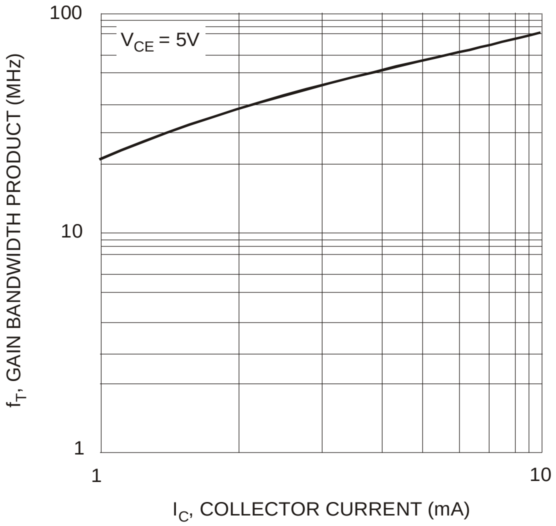
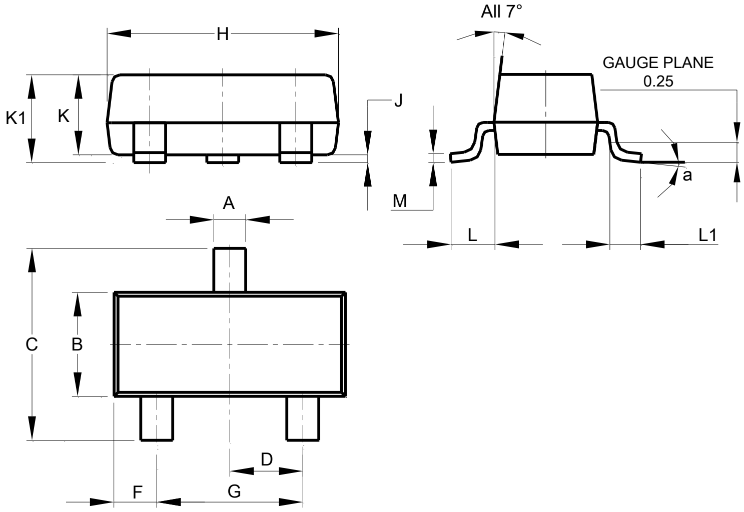


Figure 8. Gain Bandwidth Product vs Collector Current

Package Outline Dimensions

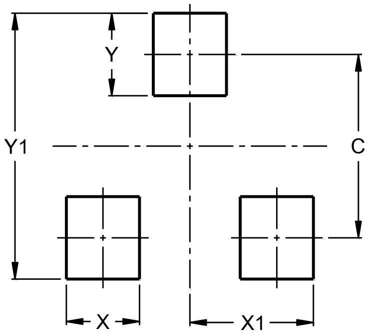
SOT23



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.