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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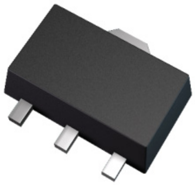
Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Complementary NPN Type Available (NK-2DC4672)

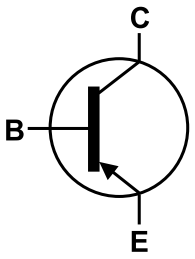
Mechanical Data

- Case: SOT89
- 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. Solderable per MIL-STD-202, Method 208 ⓔ3
- Weight: 0.052 grams (approximate)

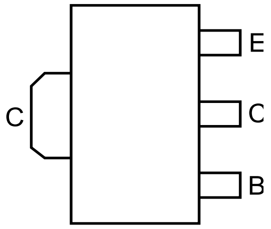
SOT89



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}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-6	V
Peak Pulse Current	I_{CM}	-6	A
Continuous Collector Current	I_C	-3	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	0.9	W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	139	°C/W
Power Dissipation (Note 7)	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction to Lead (Note 8)	$R_{\theta JL}$	5.3	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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:
6. Device mounted on FR-4 PCB with minimum recommended pad layout.
7. Device mounted on FR-4 PCB with 1 inch^2 copper pad layout.
8. Thermal resistance from junction to solder-point (on the exposed collector pad).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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

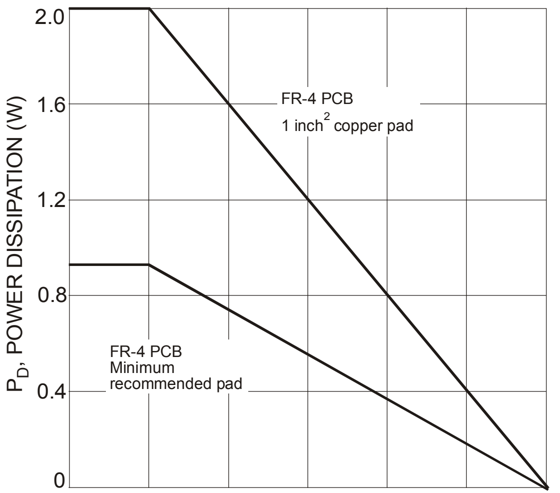
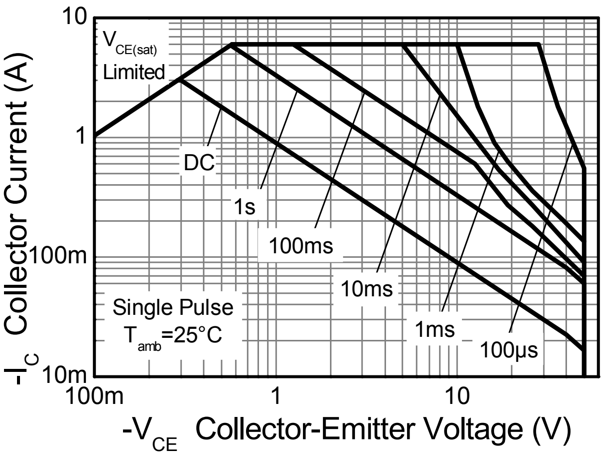


Fig. 1 Power Dissipation vs.
Ambient Temperature



Safe Operating Area

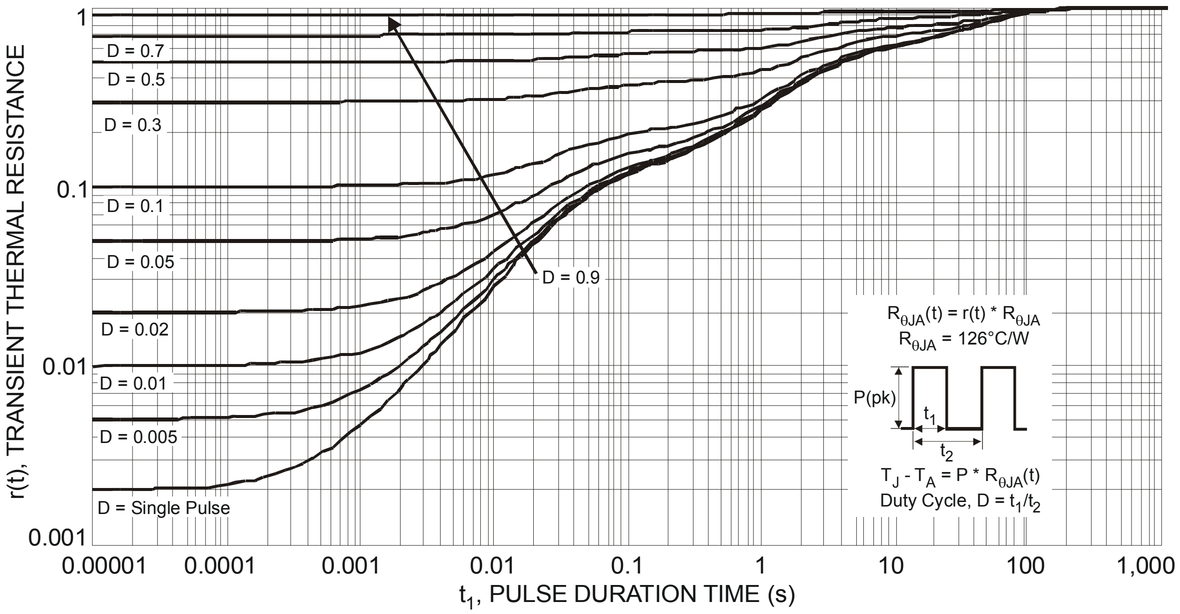


Fig. 10 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -50μA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-50	—	—	V	I_C = -1mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -50μA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	—	-0.1	μA	V_{CB} = -50V, I_E = 0
Emitter Cut-Off Current	I_{EBO}	—	—	-0.1	μA	V_{EB} = -5V, I_C = 0
ON CHARACTERISTICS (Note 10)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	-100	-350	mV	I_C = -1A, I_B = -50mA
DC Current Gain	h_{FE}	82	—	270	—	V_{CE} = -2V, I_C = -500mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	27	—	pF	V_{CB} = -10V, I_E = 0, f = 1MHz
Current Gain-Bandwidth Product	f_T	—	160	—	MHz	V_{CE} = -2V, I_C = -100mA, f = 100MHz

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

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

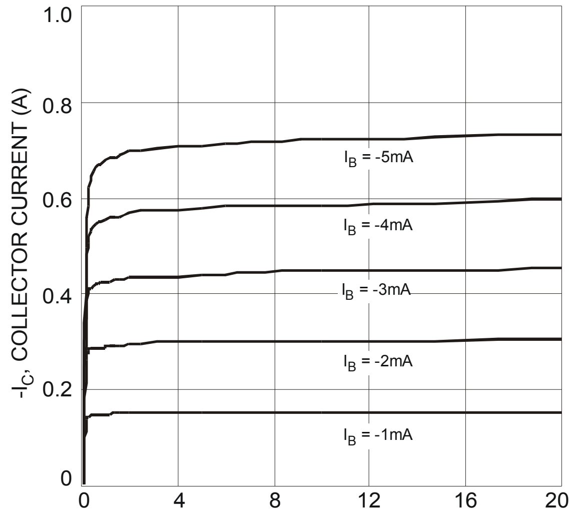


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

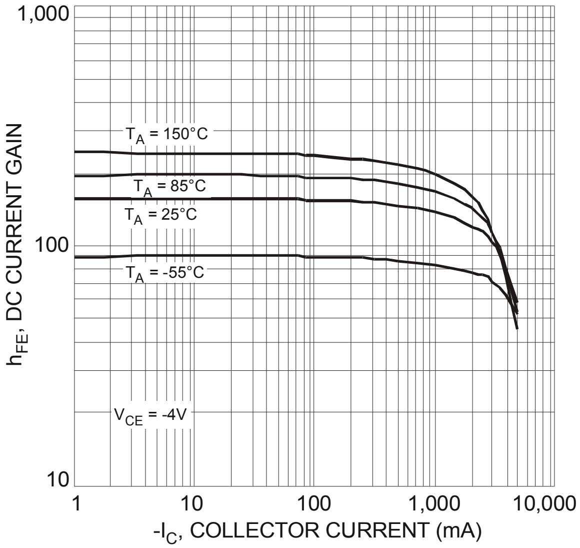


Fig. 4 Typical DC Current Gain vs. Collector Current

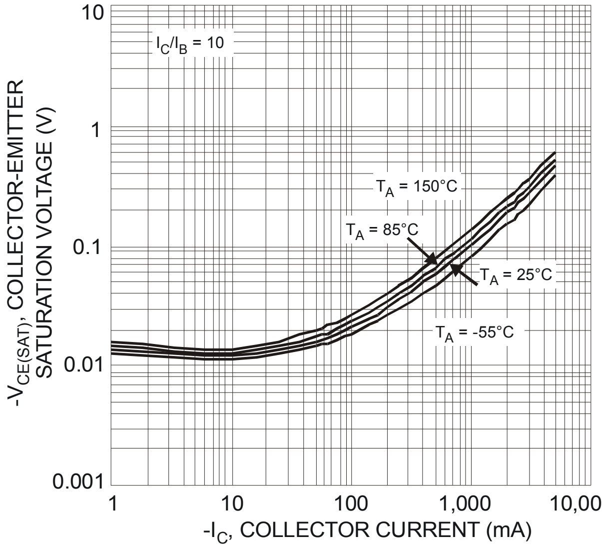


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

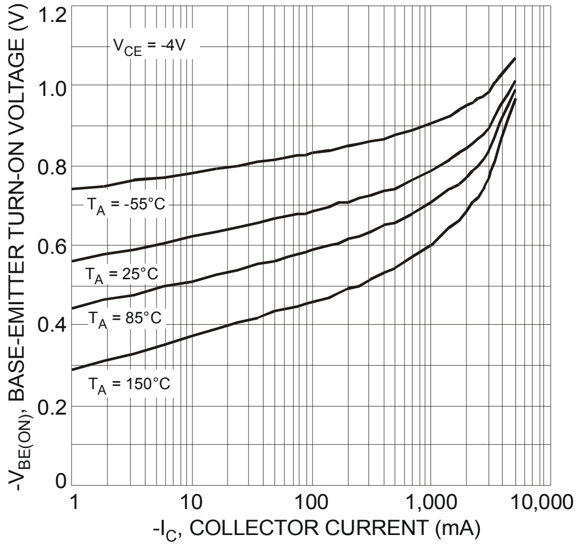


Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

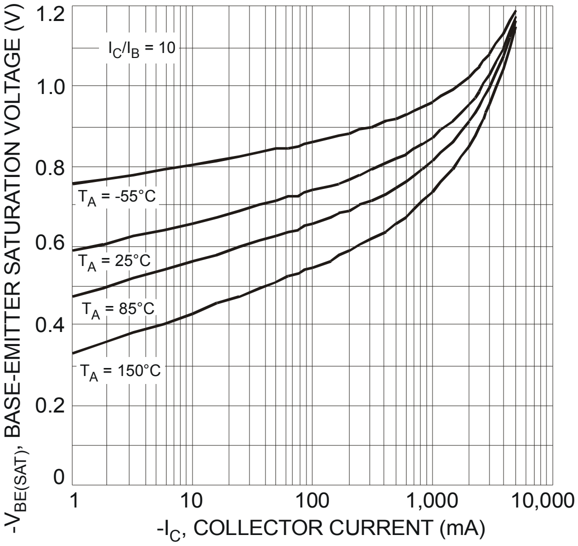


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

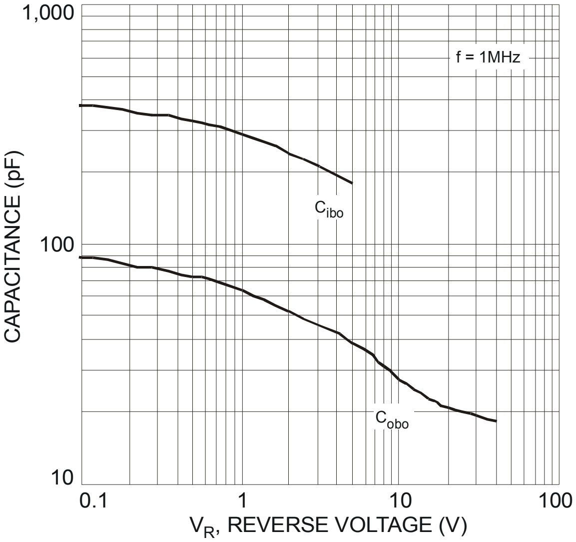


Fig. 8 Typical Capacitance Characteristics

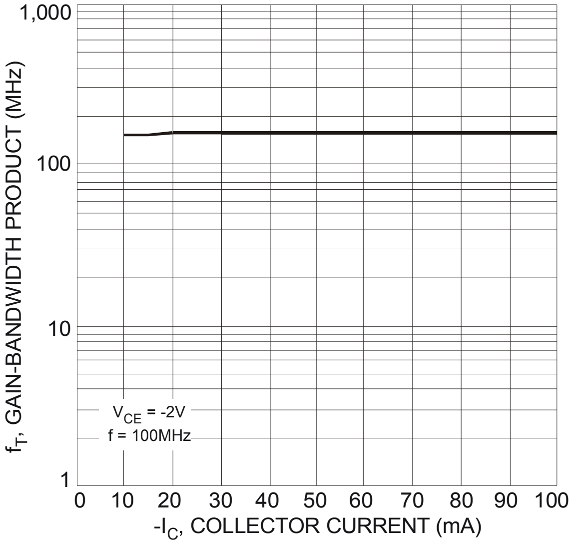
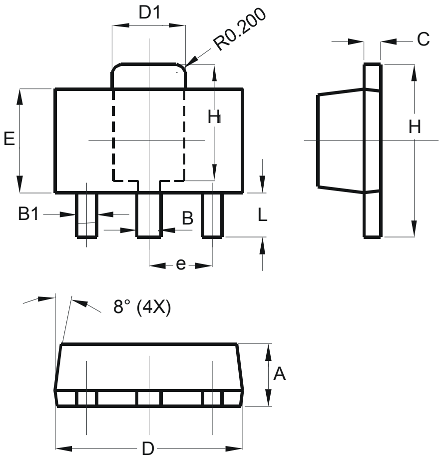


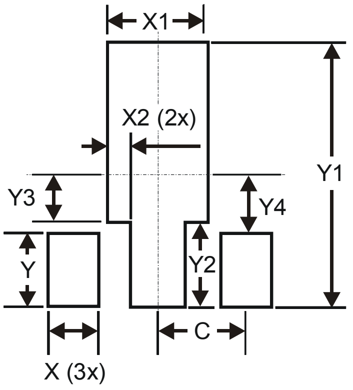
Fig. 9 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



SOT89		
Dim	**Min**	**Max**
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500