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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企业微信二维码

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Features

- BV_{CEO} > 50V
- I_C = 3.0A Continuous Current
- Complementary PNP Type Available (DPLS350Y)
- Ideally Suited for Automated Assembly Processes

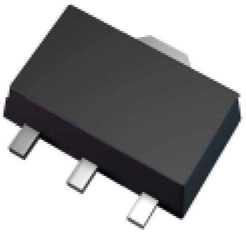
Mechanical Data

- Package: SOT89
- Package Material: Molded Plastic, “Green” Molding Compound UL Flammability 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: 0.052 grams (Approximate)

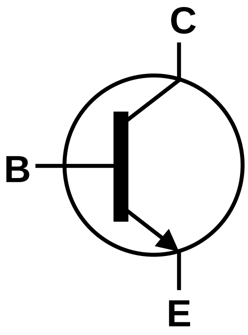
Applications

- Medium power switching or amplification

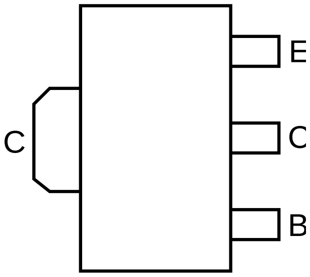
SOT89



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}	5	V
Peak Pulse Collector Current	I_{CM}	5	A
Continuous Collector Current	I_C	3	A
Base Current	I_B	0.5	A

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1	W
	(Note 6)		1.6	
	(Note 7)		2.0	
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	125	°C/W
	(Note 6)		78	
	(Note 7)		62.5	
Thermal Resistance, Junction to Lead	(Note 8)	$R_{\theta JL}$	5.7	°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:
5. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
7. Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
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

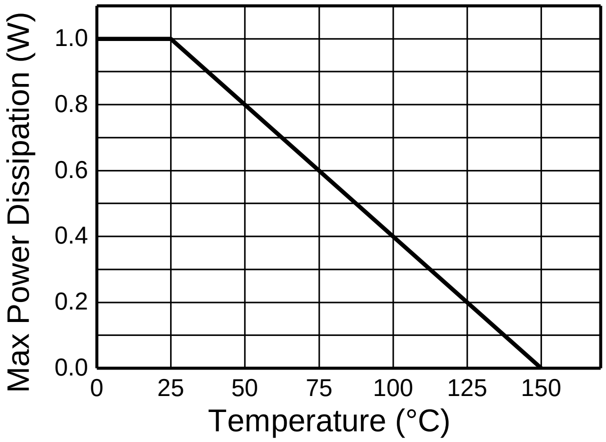


Figure 1. Derating Curve

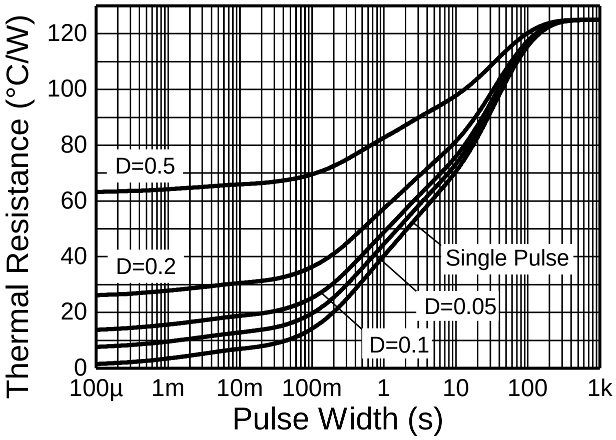


Figure 2. Transient Thermal Resistance

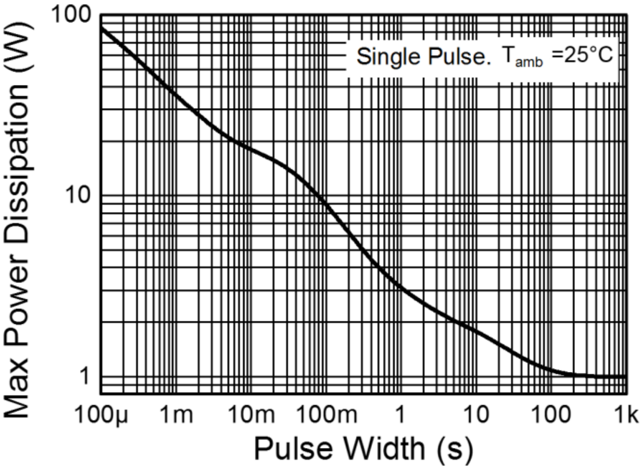


Figure 3. Pulse Power Dissipation

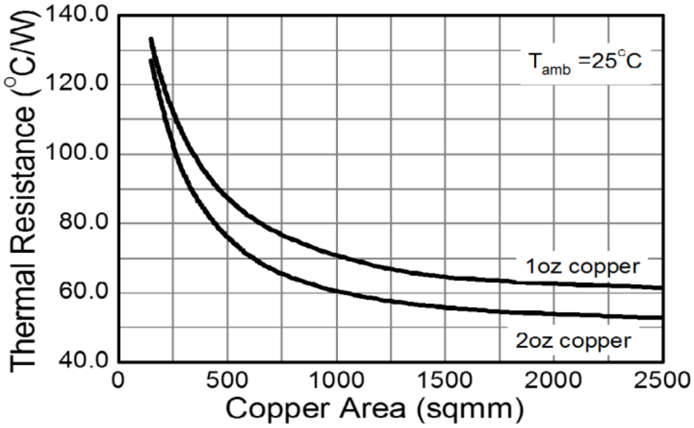


Figure 4. Rthja vs Area

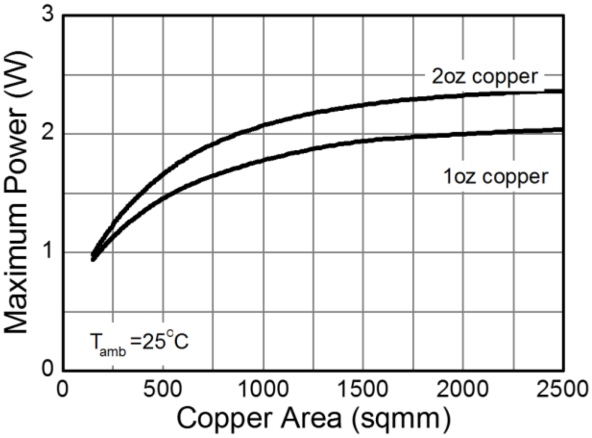


Figure 5. Max Power vs Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 10)						
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 50V
		—	—	50	μA	V_{CB} = 50V, T_A = +150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 5V
Collector-Emitter Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 50V, V_{BE} = 0
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	50	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100μA
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h_{FE}	300	—	—	—	V_{CE} = 2V, I_C = 0.1A
		300	—	—		V_{CE} = 2V, I_C = 0.5A
		300	—	700		V_{CE} = 2V, I_C = 1A
		200	—	—		V_{CE} = 2V, I_C = 2A
		100	—	—		V_{CE} = 2V, I_C = 3A
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	38	80	mV	I_C = 0.5A, I_B = 50mA
		—	70	160		I_C = 1A, I_B = 50mA
		—	130	280		I_C = 2A, I_B = 100mA
		—	124	260		I_C = 2A, I_B = 200mA
		—	180	370		I_C = 3A, I_B = 300mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	62	130	mΩ	I_E = 2A, I_B = 200mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.1	V	I_C = 2A, I_B = 100mA
		—	—	1.2	V	I_C = 3A, I_B = 300mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	1.1	V	V_{CE} = 2V, I_C = 1A
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 5V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{obo}	—	—	25	pF	V_{CB} = 10V, f = 1MHz

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

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

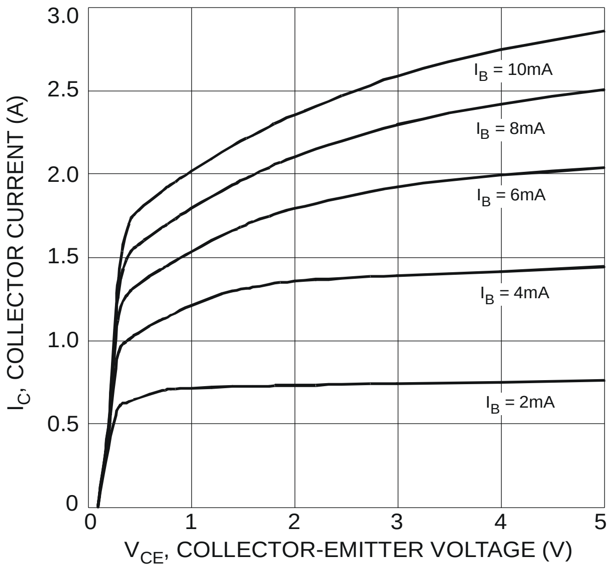


Figure 6. Typical Collector Current vs Collector-Emitter Voltage

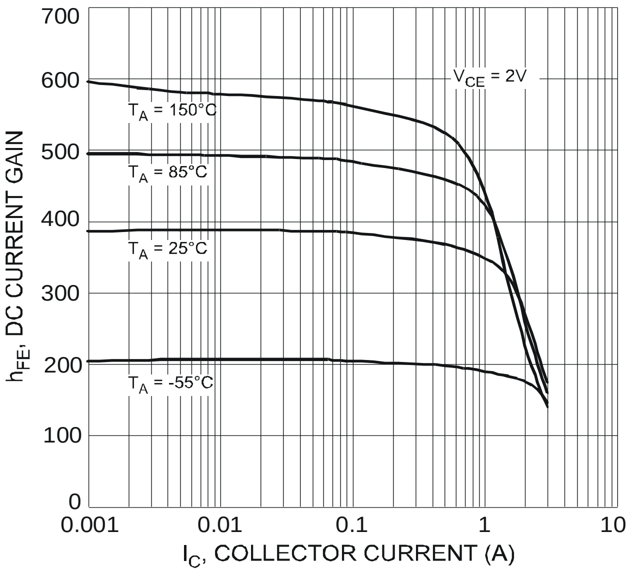


Figure 7. Typical DC Current Gain vs Collector Current

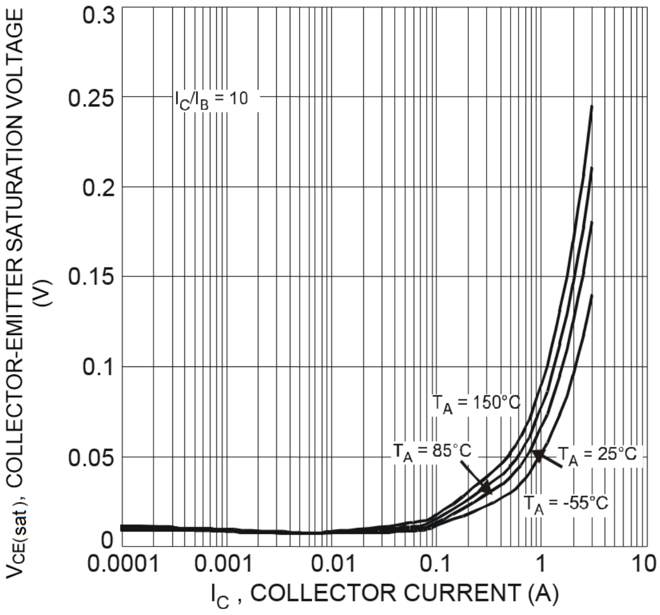


Figure 8. Saturation Voltage vs Collector Current

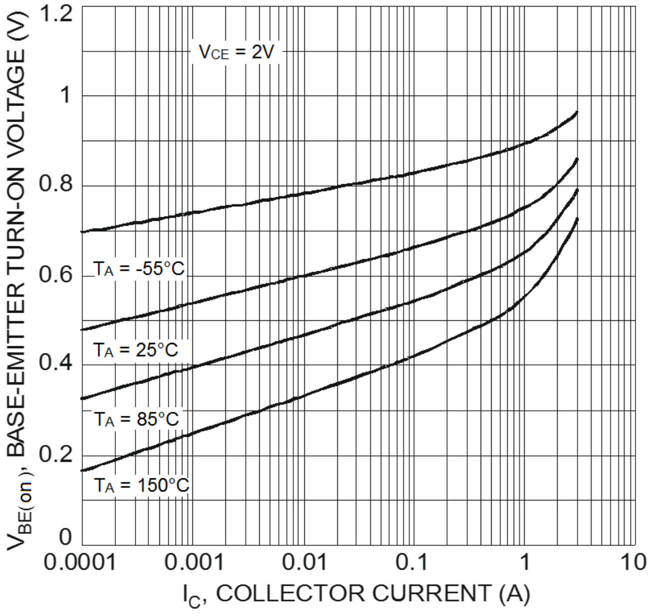


Figure 9. Typical Base-Emitter Turn-On Voltage vs Collector Current

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

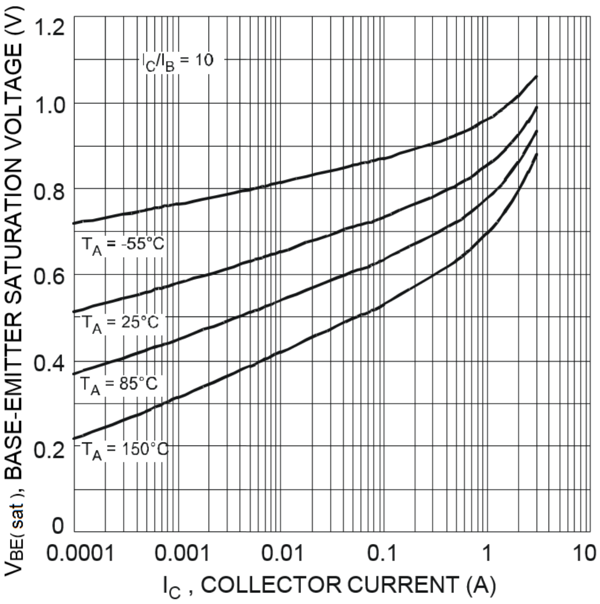


Figure 9. Typical Base-Emitter Saturation Voltage vs Collector Current

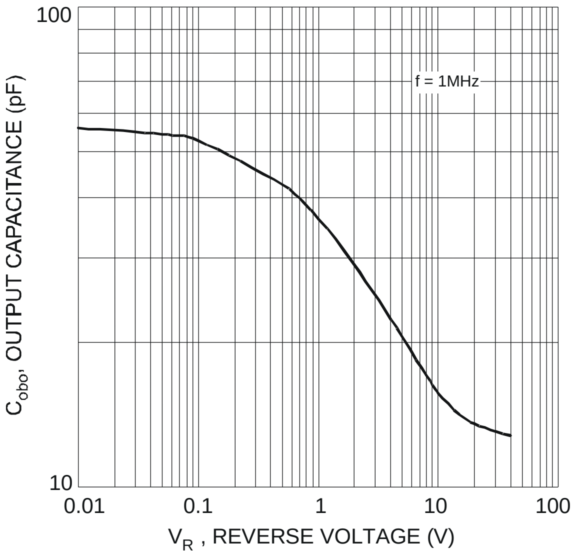


Figure 10. Typical Output Capacitance Characteristics

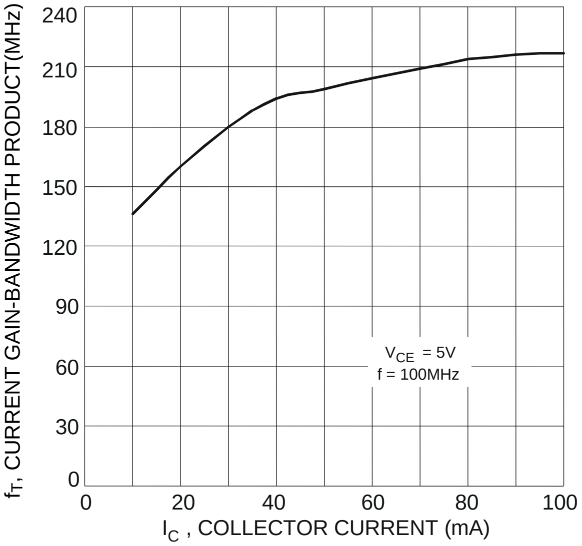
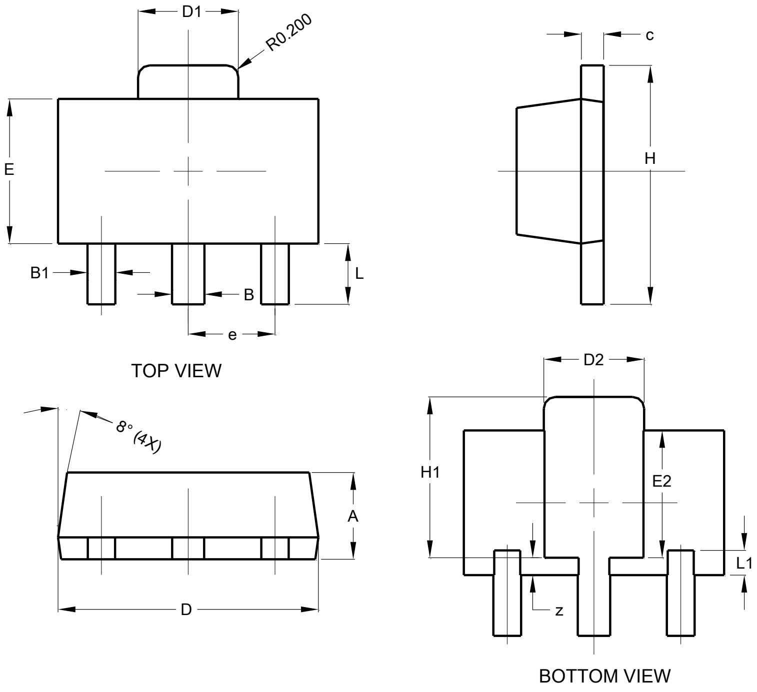


Figure 11. Typical Gain Bandwidth Product vs Collector Current

Package Outline Dimensions

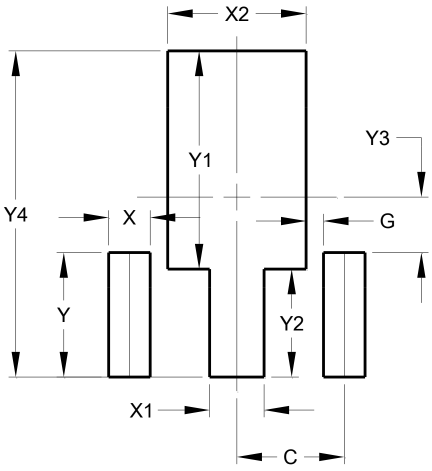
SOT89



SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530