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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Features

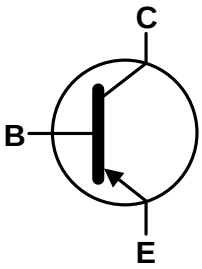
- BV_{CEO} > -32V
- I_C = -2A High Continuous Current
- Low Saturation Voltage $V_{CE(sat)}$ < -800mV @ -2A
- Complementary NPN Type: 2DD1766

Mechanical Data

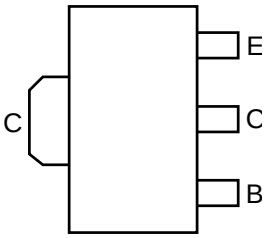
- Package: SOT89
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.052 grams (Approximate)

SOT89

Top View



Device Symbol



Pin Out – Top View

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

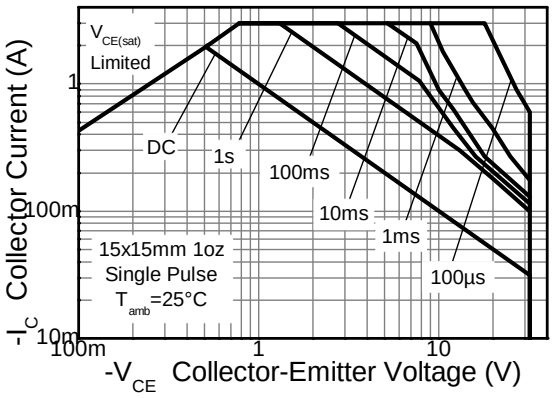
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-32	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Collector Current	I_{CM}	-3	A
Base Current	I_B	-500	mA

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

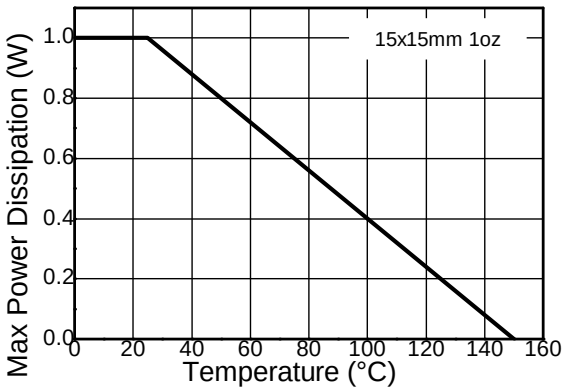
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	19	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Thermal resistance from junction to solder-point (on the exposed collector pad).

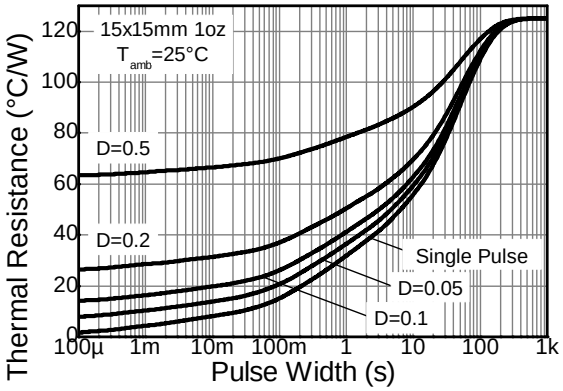
Thermal Characteristics and Derating Information



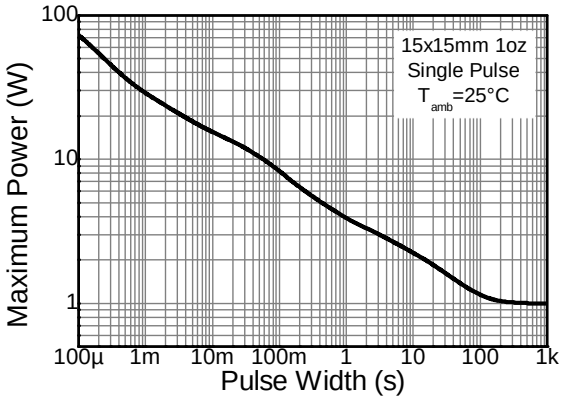
Safe Operating Area



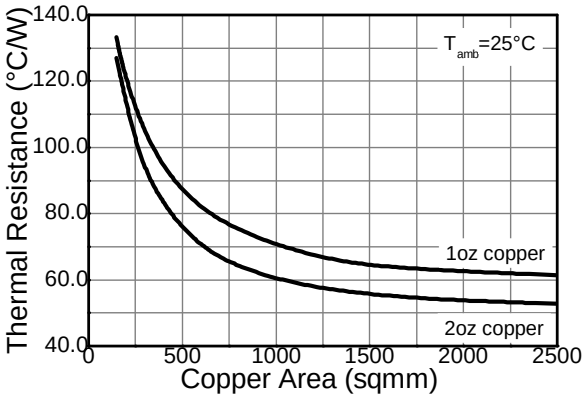
Derating Curve



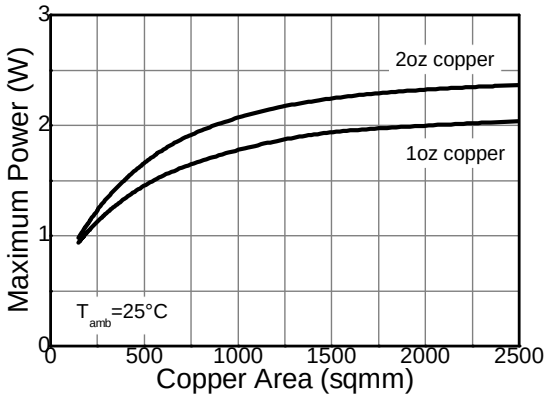
Transient Thermal Impedance



Pulse Power Dissipation



R_{TH} vs Area



P_D vs Area

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)							
Collector-Base Breakdown Voltage		BV_{CBO}	-40	—	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	-32	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage		BV_{EBO}	-6	—	—	V	I_E = -100μA
Collector Cutoff Current		I_{CBO}	—	—	-100	nA	V_{CB} = -20V
Emitter Cutoff Current		I_{EBO}	—	—	-100	nA	V_{EB} = - 5V
ON CHARACTERISTICS (Note 7)							
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	-0.35	-0.8	V	I_C = -2A, I_B = -0.2A
DC Current Gain	NK-2DB1188P	h_{FE}	82	—	180	—	V_{CE} = -3V, I_C = -0.5A
	NK-2DB1188Q		120		270		
	NK-2DB1188R		180		390		
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product		f_T	—	120	—	MHz	V_{CE} = -5V, I_C = -0.1A, f = 30MHz
Output Capacitance		C_{obo}	—	20	—	pF	V_{CB} = -10V, f = 1MHz

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

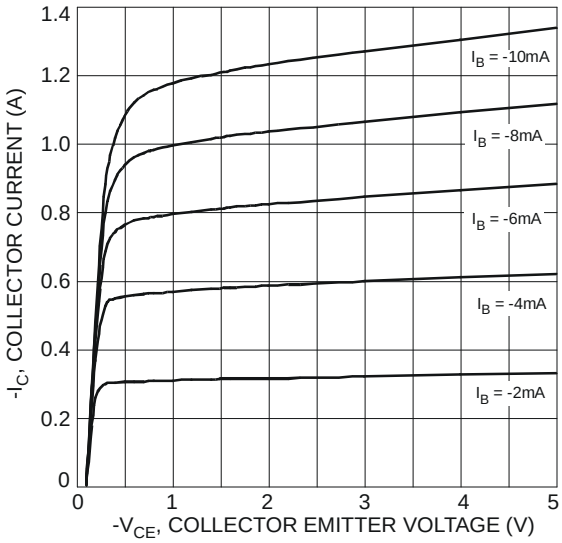


Figure 1. Typical Collector Current vs. Collector-Emitter Voltage

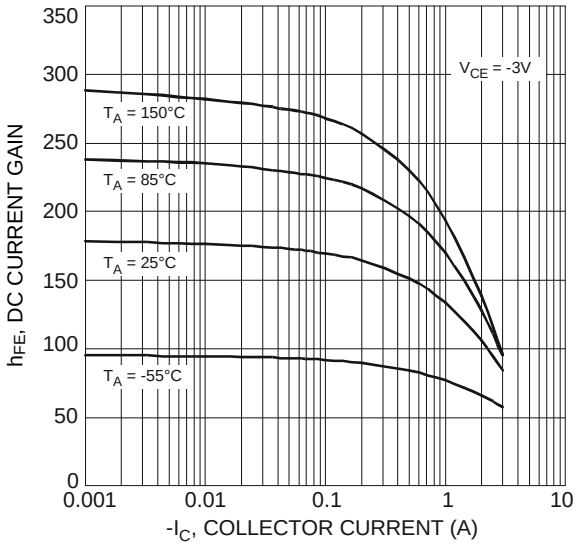


Figure 2. Typical DC Current Gain vs. Collector Current (NK-2DB1188Q)

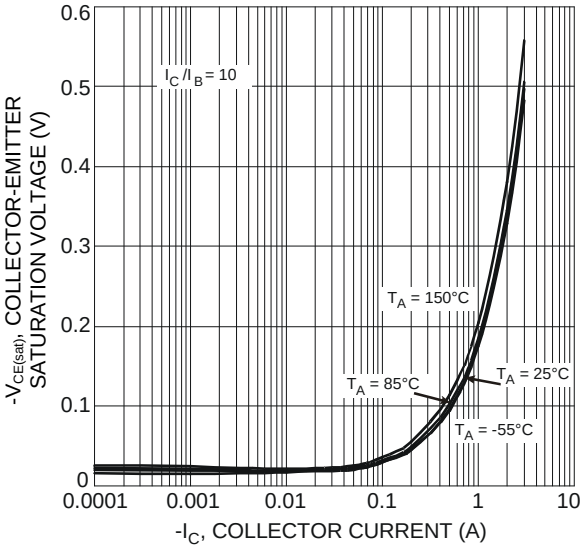


Figure 3. Typical Collector-Emitter Saturation Voltage vs. Collector Current

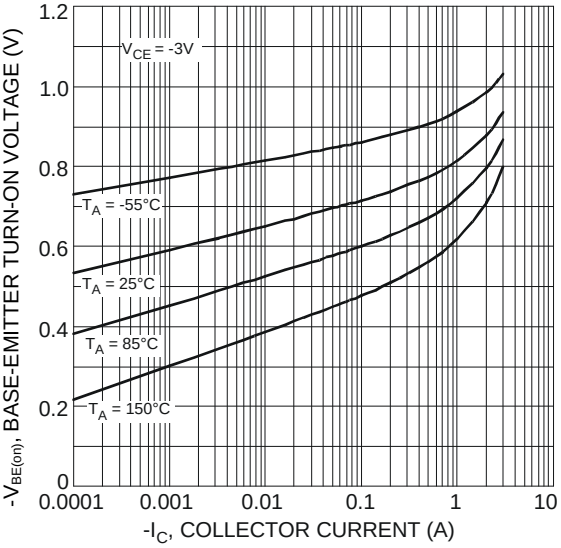


Figure 4. Typical Base-Emitter Turn-On Voltage vs. Collector Current

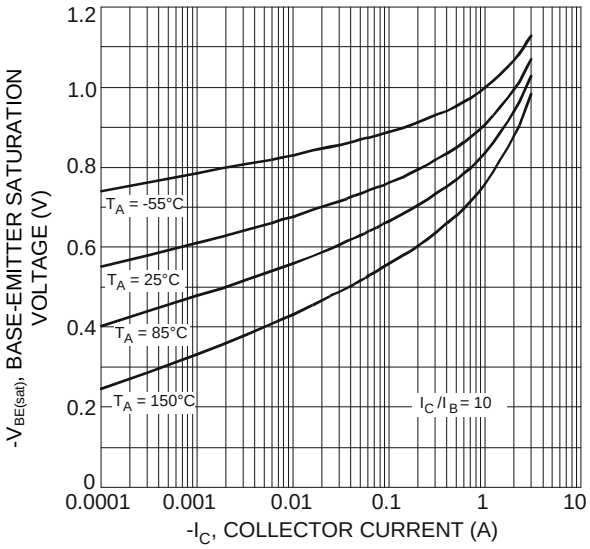


Figure 5. Typical Base-Emitter Saturation Voltage vs. Collector Current

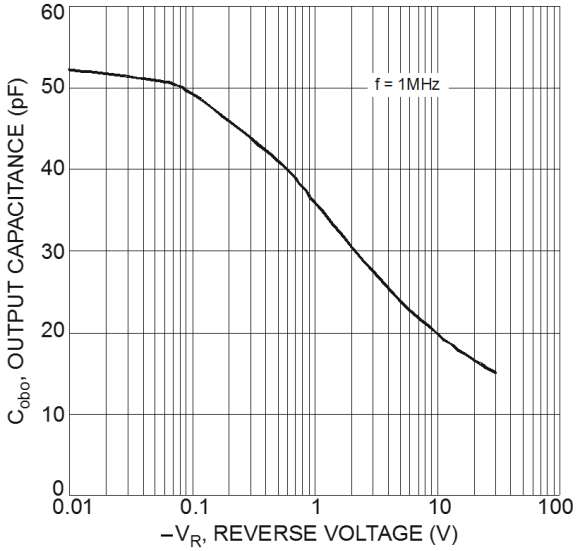


Figure 6. Typical Output Capacitance Characteristics

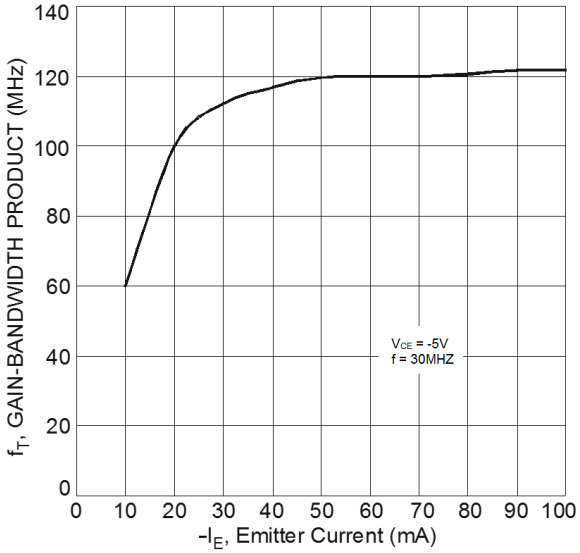
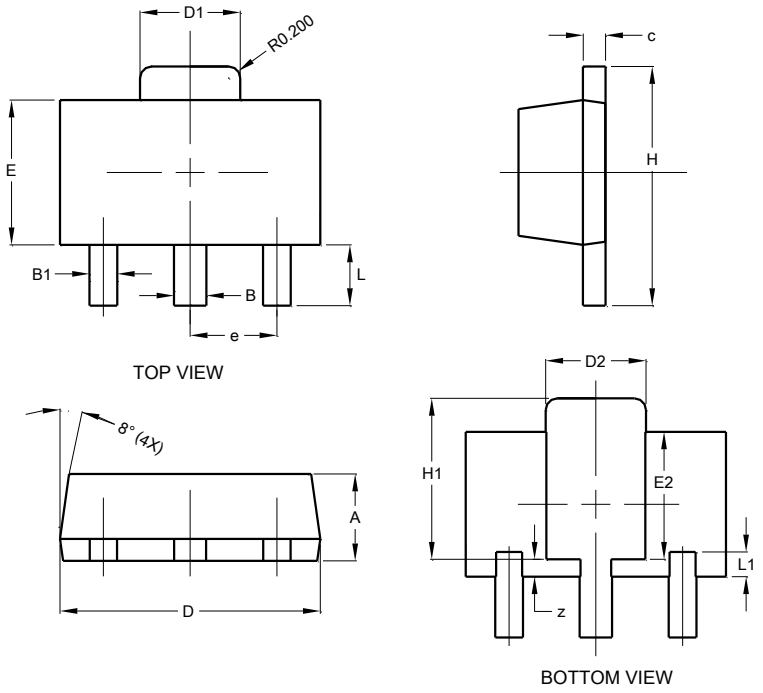


Figure 7. Typical Gain-Bandwidth Product vs. Emitter Current

Package Outline Dimensions

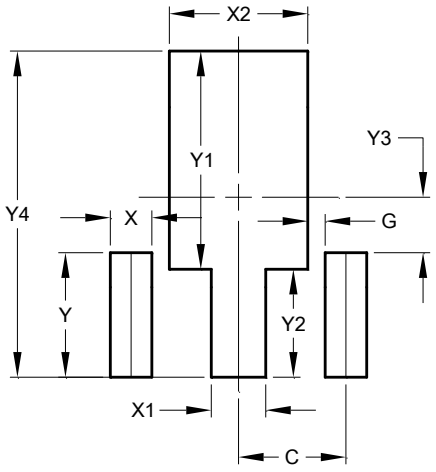
SOT89



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