70V NPN POWER SWITCHING TRANSISTOR IN SOT89

Features

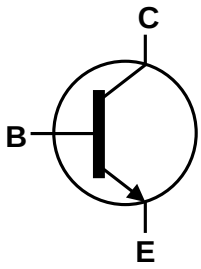
- BV_{CEO} > 70V
- I_C = 2A High Continuous Collector Current
- I_{CM} Up to 4A Peak Pulse Current
- 2W Power Dissipation
- Low Saturation Voltage <300 mV @ 1A
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

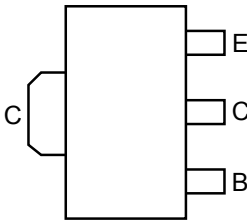
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Lead. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.052 grams (Approximate)

SOT89

Top View



Device Symbol



Top View
Pin-Out

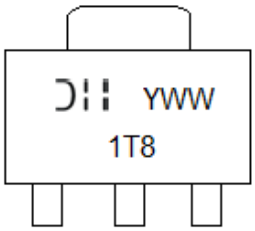
Ordering Information (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DXTN26070CY-13	Standard	1T8	13	12	2,500

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

SOT89



1T8 = Product Type Marking Code
YWW = Date Code Marking
Y = Last Digit of Year (ex: 5 = 2015)
WW = Week Code 01 - 52

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	70	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	2	A
Peak Pulse Current (Note 5)	I_{CM}	4	A

Note 5. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%.

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

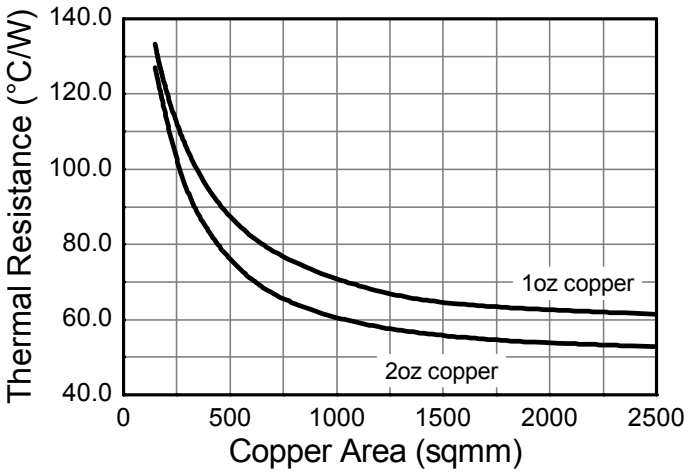
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	0.7	W
	(Note 7)		1.0	
	(Note 8)		1.5	
	(Note 9)		2.0	
Thermal Resistance, Junction to Ambient Air	(Note 6)	$R_{\theta JA}$	178	°C/W
	(Note 7)		125	
	(Note 8)		83	
	(Note 9)		60	
Thermal Resistance, Junction to Lead	(Note 10)	$R_{\theta JL}$	22	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

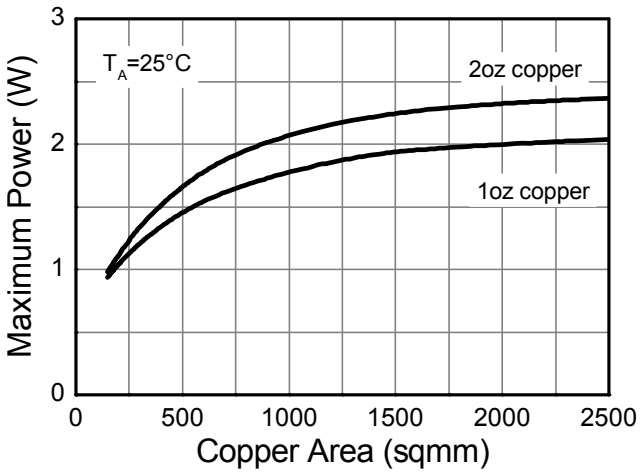
ESD Ratings (Note 11)

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

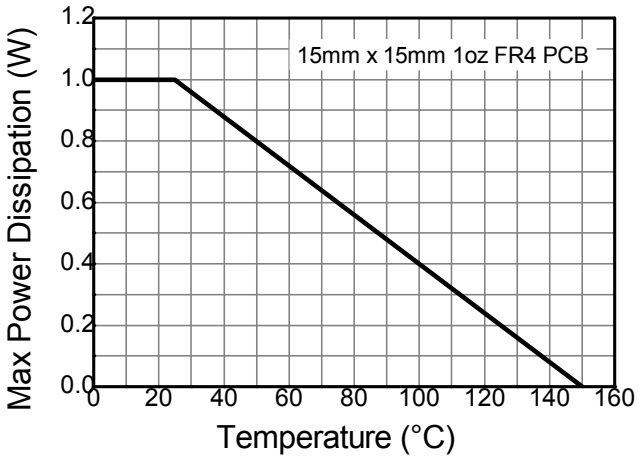
Notes:
6. For a device mounted with the exposed collector pad on minimum recommended pad layout (MRP) 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Same as Note 5, except the device is mounted with the exposed collector pad on 15mm x 15mm 1oz copper.
8. Same as Note 5, except the device is mounted with the exposed collector pad on 25mm x 25mm 1oz copper.
9. Same as Note 5, except the device is mounted with the exposed collector pad on 50mm x 50mm 1oz copper.
10. Thermal resistance from junction to solder-point (on the exposed collector pad).
11. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

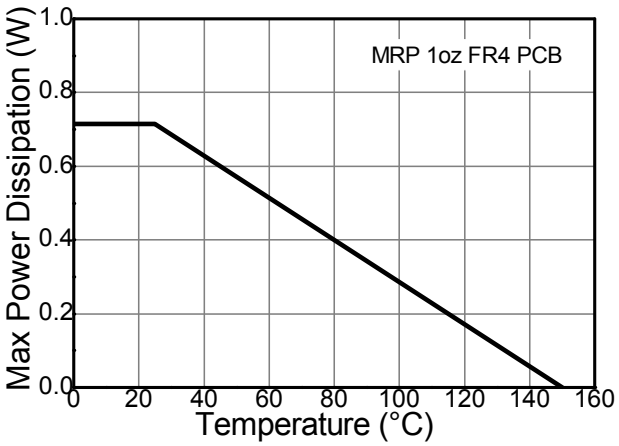




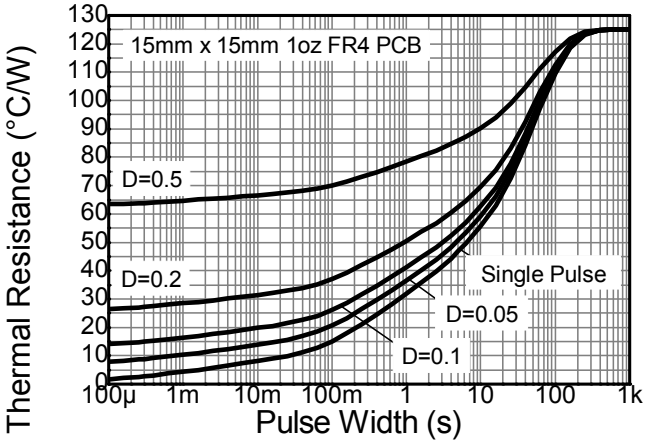
Thermal Characteristics and Derating Information (continued)



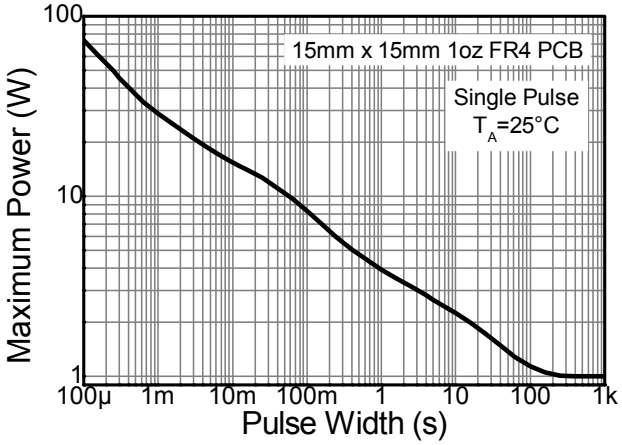
Derating Curve



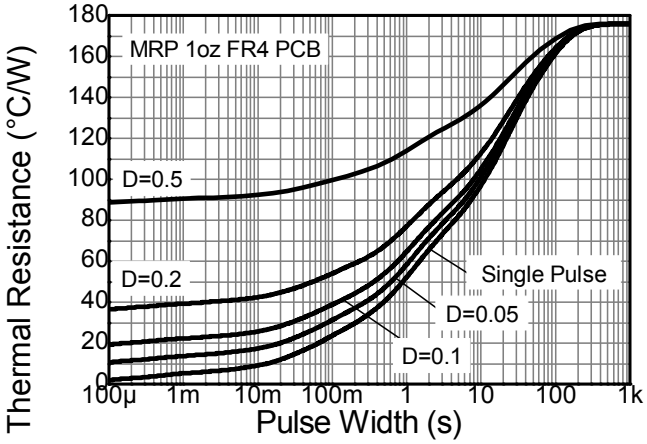
Derating Curve



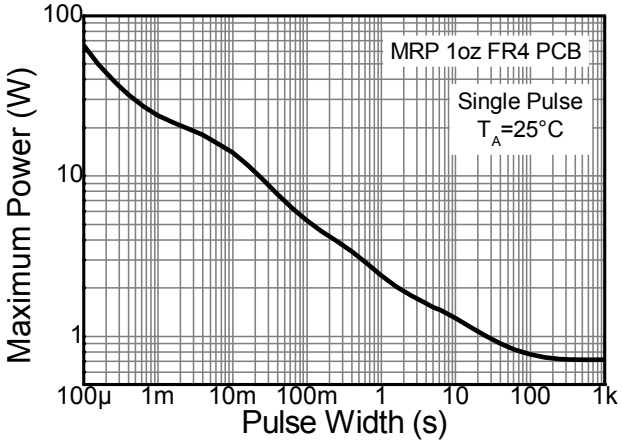
Transient Thermal Impedance



Pulse Power Dissipation



Transient Thermal Impedance



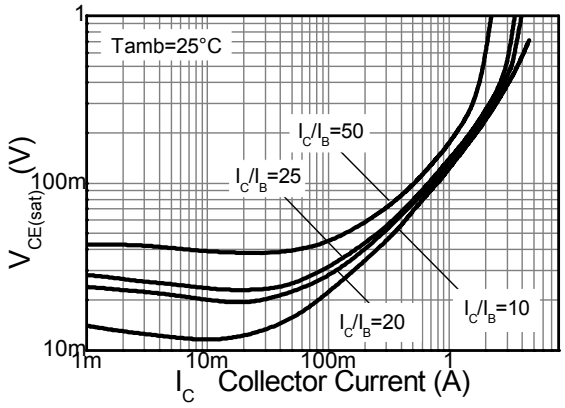
Pulse Power Dissipation

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

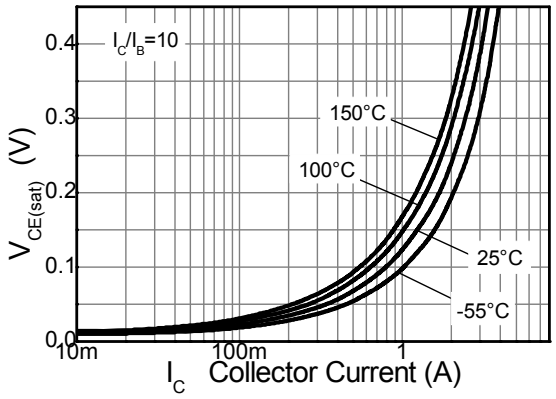
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	150	-	-	V	I_C = 100 µA
Collector-Emitter Breakdown Voltage (Note 12)	BV_{CEO}	70	-	-	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.2	-	V	I_E = 100 µA
Collector-Base Cutoff Current	I_{CBO}	- -	<1 -	50 10	nA µA	V_{CB} = 96V V_{CB} = 96V, T_A = +100°C
Emitter-Base Cutoff Current	I_{EBO}	-	<1	20	nA	V_{EB} = 5.6V
ON CHARACTERISTICS (Note 12)						
Static Forward Current Transfer Ratio	h_{FE}	120 150 200	260 290 300	- - 500	- - -	I_C = 1mA, V_{CE} = 5V I_C = 10mA, V_{CE} = 2V I_C = 100mA, V_{CE} = 2V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	150	300	mV	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	-	780	-	mV	I_C = 1A, V_{CE} = 5V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	950	-	mV	I_C = 1A, I_B = 50mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	-	10	-	pF	V_{CB} = 10V, f = 1MHz
Transition Frequency	f_T	150	220	-	MHz	V_{CE} = 10V, I_C = 50mA, f = 100MHz
Turn-On Time	t_{on}	-	63	-	ns	V_{CC}=10V, I_C =0.5A I_{B2} = -I_{B1} = 25mA
Delay Time	t_d	-	33	-		
Rise Time	t_r	-	30	-		
Turn-Off Time	t_{off}	-	420	-		
Storage Time	t_s	-	380	-		
Fall Time	t_f	-	40	-		

Note: 12. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

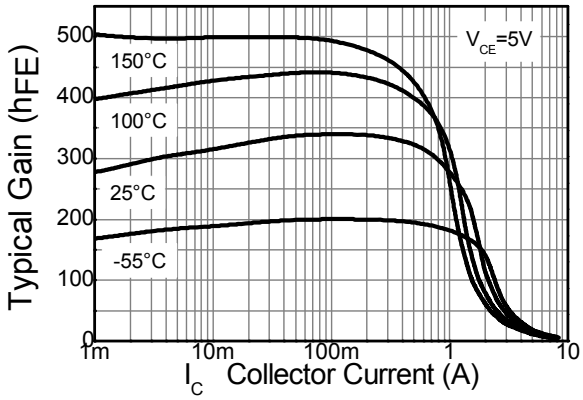
Typical Characteristics (@T_A = +25°C, unless otherwise specified.)



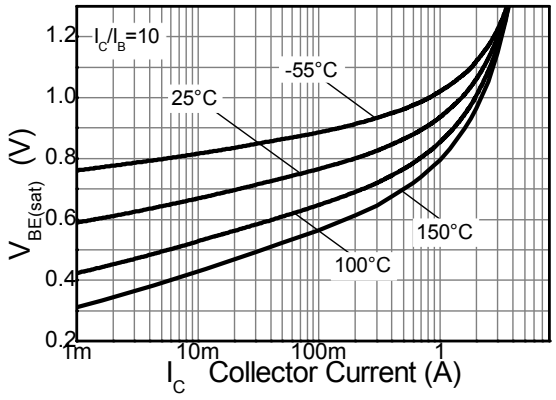
$V_{CE(sat)}$ v I_C



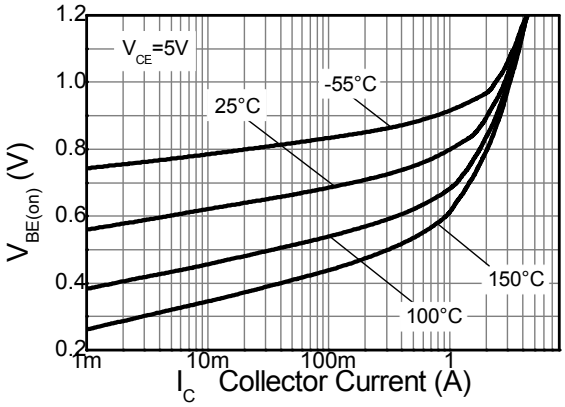
$V_{CE(sat)}$ v I_C



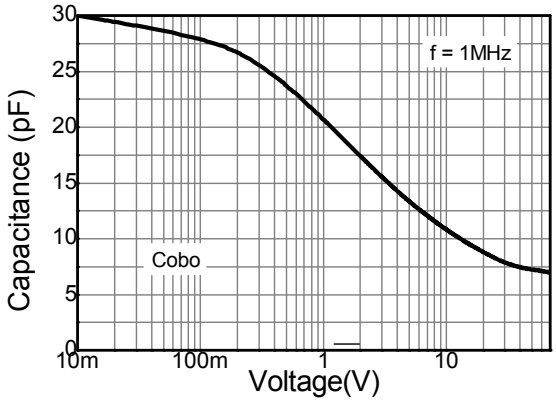
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



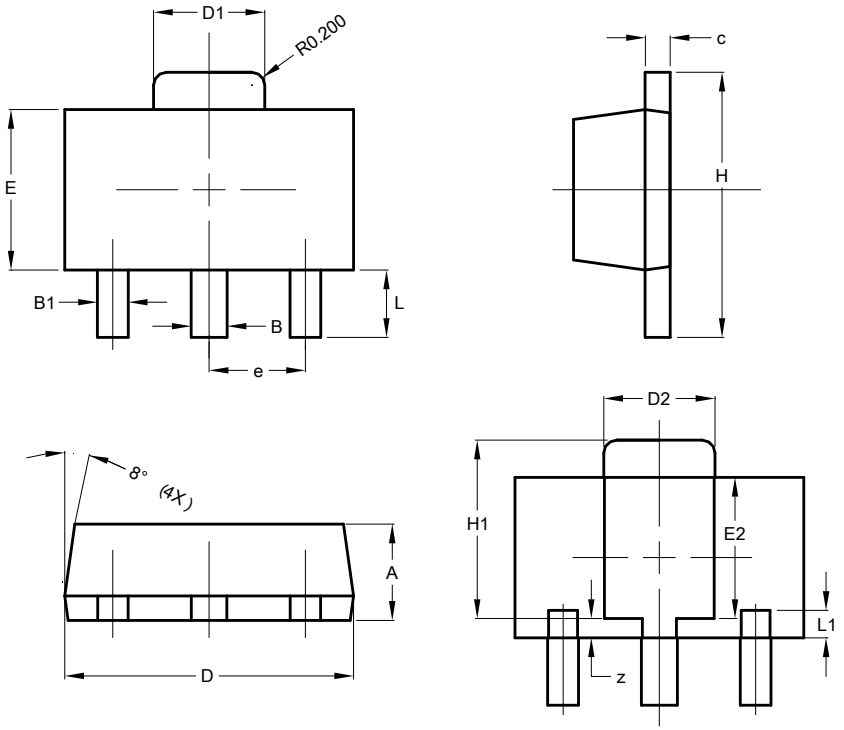
$V_{BE(on)}$ v I_C



Capacitance v Voltage

Package Outline Dimensions

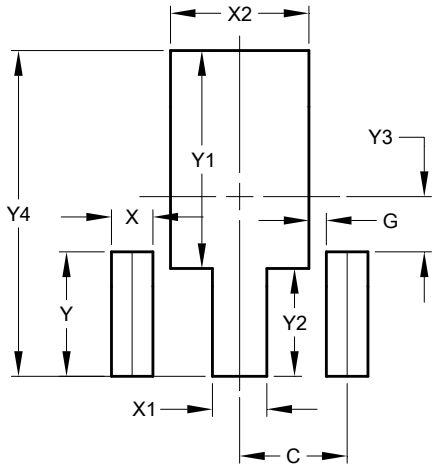
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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	0.427 REF		
Z	0.30 REF		
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



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

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