

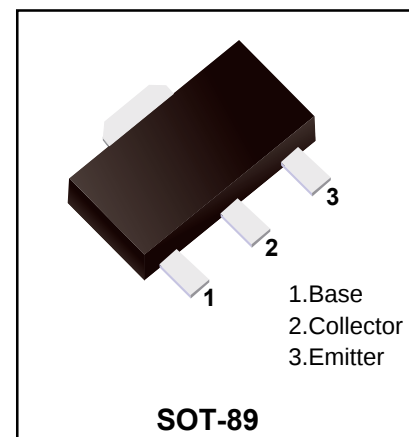
NPN Epitaxial Planar Silicon Transistors

FEATURES

- ◆ Low Saturation Voltage
- ◆ High h_{FE}
- ◆ Large Current Capacity
- ◆ Very Small Size Making it Easy to Provide High-Density Small-Sized Hybrid IC's
- ◆ These Devices are Pb-Free and are RoHS Compliant

APPLICATIONS

- ◆ Strobe DC-DC Converters, Relay Drivers, Hammer Drivers, Lamp Drivers, Motor Drivers



MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbols	Value	Units
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	5	A
Collector Current (Pulse)	I_{CP}	8	A
Collector Dissipation (Note 1)	P_C	500	mW
		1.5	W
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. When mounted on ceramic substrate (250 mm² x 0.8 mm).

ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$

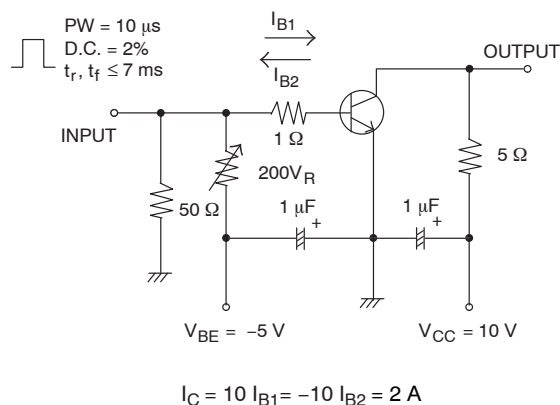
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Collector Cutoff Current	$V_{CB} = 50\text{ V}, I_E = 0\text{ A}$	I_{CBO}	-	-	100	nA
Emitter Cutoff Current	$V_{EB} = 5\text{ V}, I_C = 0\text{ A}$	I_{EBO}	-	-	100	nA
DC Current Gain	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	$h_{FE(1)}$	120	-	560	
	$V_{CE} = 2\text{ V}, I_C = 3\text{ A}$	$h_{FE(2)}$	95	-	-	
Gain-Bandwidth Product	$V_{CE} = 10\text{ V}, I_C = 50\text{ mA}$	f_T	-	120	-	MHz
Output Capacitance	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	C_{ob}	-	45	-	pF
Collector to Emitter Saturation Voltage	$I_C = 3\text{ A}, I_B = 60\text{ mA}$	$V_{CE(sat)}$	-	-	500	mV
Base to Emitter Saturation Voltage	$I_C = 3\text{ A}, I_B = 60\text{ mA}$	$V_{BE(sat)}$	-	-	1.5	V
Turn-On Time	See specified Test Circuit	t_{on}	-	30	-	ns
Storage Time		t_{stg}	-	300	-	ns
Fall Time		t_f	-	40	-	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

h_{FE} CLASSIFICATION

RANK	2SD1628-E	2SD1628-F	2SD1628-G
RANGE	120-200	160-320	280-560
MARKING	DK E*	DK F*	DK G*

Switching Time Test Circuit



Typical Characteristics

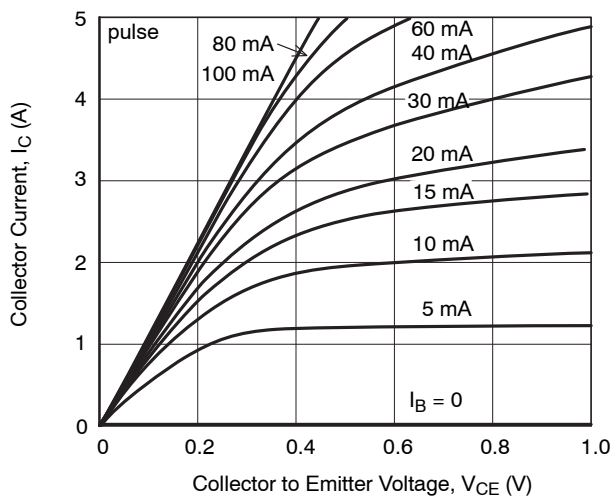


Figure 1. $I_C - V_{CE}$

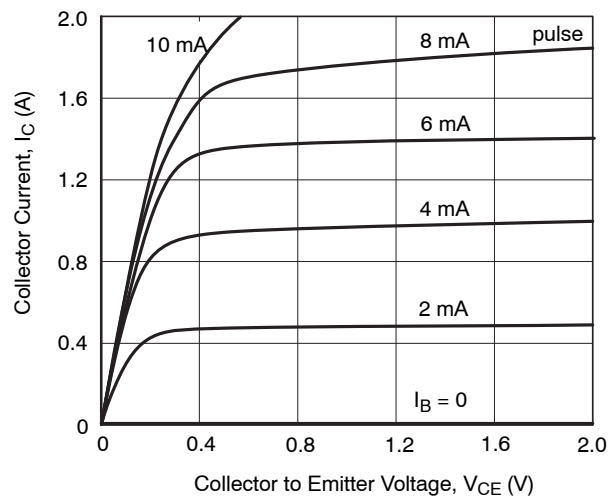


Figure 2. $I_C - V_{CE}$

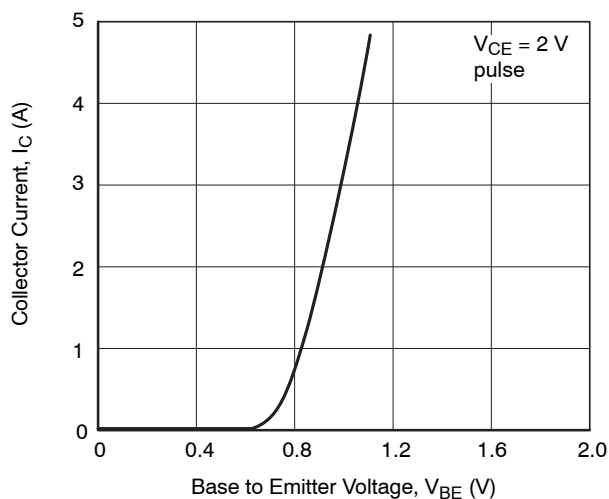


Figure 3. $I_C - V_{BE}$

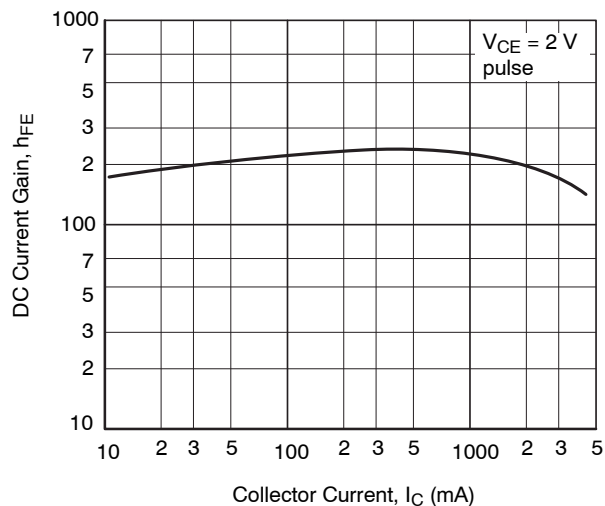


Figure 4. $h_{FE} - I_C$

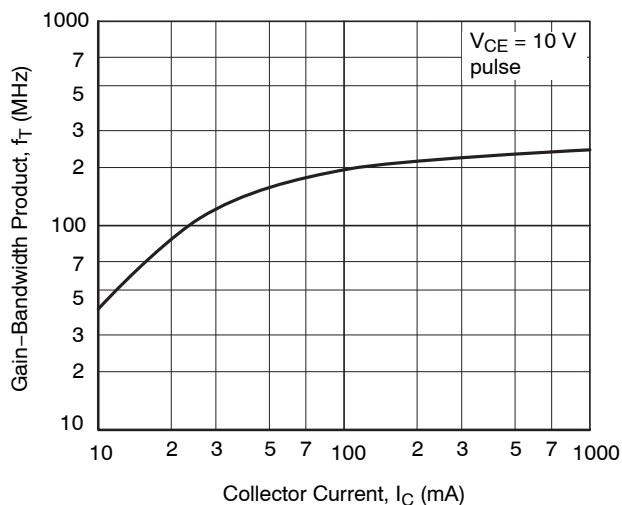


Figure 5. $f_T - I_C$

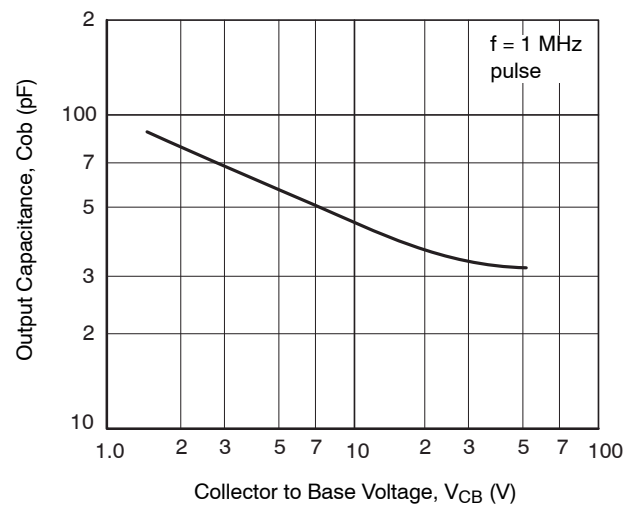


Figure 6. $C_{ob} - V_{CB}$

Ordering information

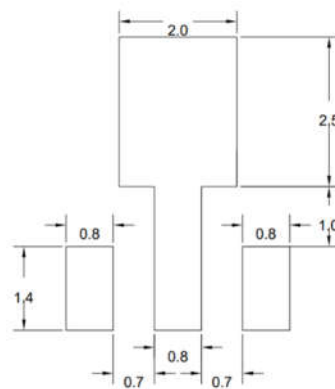
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

Package Dimensions

SOT-89

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

The recommended mounting pad size



UNIT:MM

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