TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

Engineer Specification

TSC5327

High Voltage NPN Transistor

TO-220

Pin Definition:
1. Base
2. Collector
3. Emitter

PRODUCT SUMMARY

BV_{CEO}	800V
BV_{CBO}	1200V
I_C	4A
$V_{CE(SAT)}$	3V @ I_C / I_B = 2.5A / 0.5A

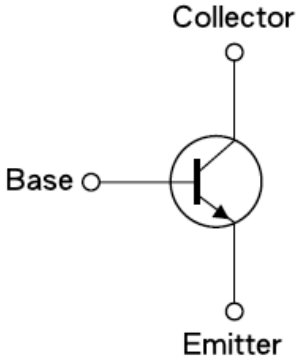
Features

- High Voltage
- High Speed Switching

Structure

- Silicon Triple Diffused Type
- NPN Silicon Transistor

Block Diagram



Ordering Information

Part No.	Package	Packing
TSC5327CZ C0	TO-220	50pcs / Tube

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Collector-Base Voltage		V_{CBO}	1200V	V
Collector-Emitter Voltage		V_{CEO}	800V	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	4	A
	Pulse		10	
Base Current	DC	I_B	2	A
	Pulse		5	
Total Power Dissipation		P_D	50	W
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_{STG}	- 55 to +150	°C

Note: Single Pulse. P_W = 300uS, Duty ≤2%

Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	I_C =1mA, I_B =0	BV_{CBO}	1200	--	--	V
Collector-Emitter Breakdown Voltage	I_C =5mA, I_E =0	BV_{CEO}	800	--	--	V
Emitter-Base Breakdown Voltage	I_E =1mA, I_C =0	BV_{EBO}	7	--	--	V
Collector Cutoff Current	V_{CE} =800V, I_B=0	I_{CEO}	--	--	10	uA
Collector Cutoff Current	V_{CB} =1200V, I_E =0	I_{CBO}	--	--	1	mA
Emitter Cutoff Current	V_{EB} = 7V, I_C =0	I_{EBO}	--	--	10	uA
Collector-Emitter Saturation Voltage	I_C=1.5A, I_B =0.3A	$V_{CE(SAT)}1$	---	--	0.6	V
Collector-Emitter Saturation Voltage	I_C=2.5A, I_B =0.5A	$V_{CE(SAT)}2$	---	--	2.0	V
Base-Emitter Saturation Voltage	I_C=1.5A, I_B =0.3A	$V_{BE(SAT)}$	--	--	1.5	V
DC Current Gain	V_{CE} =5V, I_C = 0.2A	h_{FE}	20	--	40	
	V_{CE} =5V, I_C = 1A		10	--	--	
	V_{CE} =5V, I_C = 2.5A		5	--	--	
Dynamic						
Frequency	V_{CE} =10V, I_C =0.2A	f_T	--	15	--	MHz
Output Capacitance	V_{CB} =10V, f =1MHz	Cob	--	60	--	pF
Resistive Load Switching Time (Ratings)						
Rise Time	V_{CC} =250V, I_C =1.5A, I_{B1}=0.3, -I_{B2}=-0.6A, t_P =25uS	t_r		1.4	2	uS
Storage Time		t_{STG}	--	3	5	uS
Fall Time		t_f	--	0.2	0.4	uS

Note: pulse test: pulse width ≤300uS, duty cycle ≤2%

Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

Figure 1. Static Characteristics

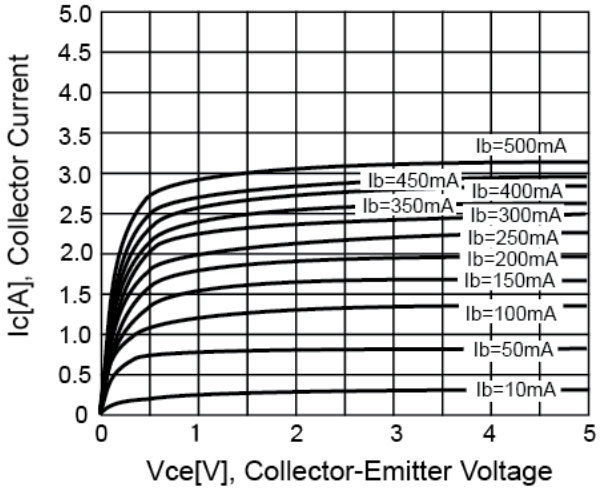


Figure 2. DC Current Gain

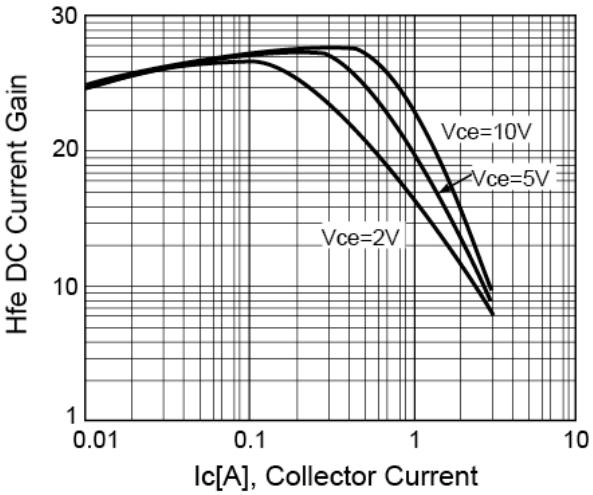


Figure 3. $V_{CE(SAT)}$ v.s. $V_{BE(SAT}$

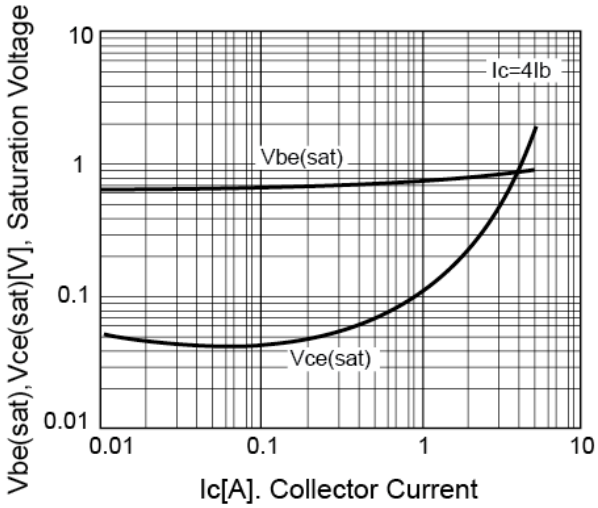
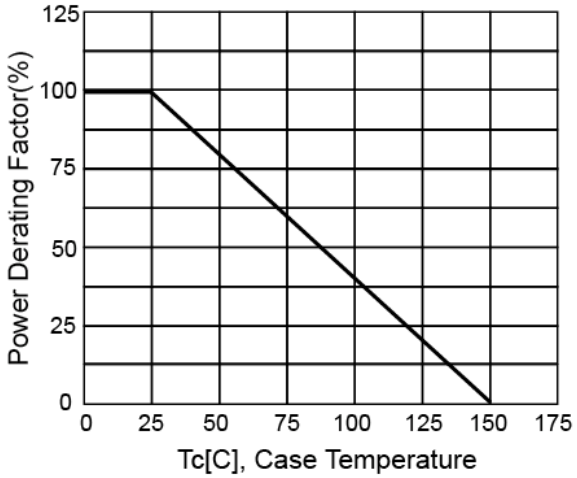
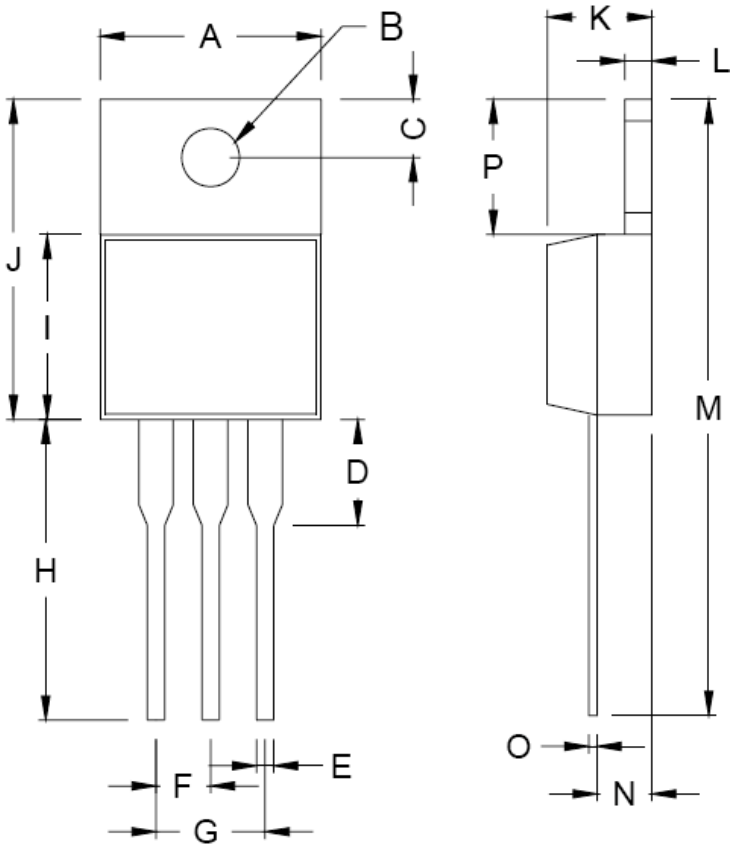


Figure 4. Power Derating



TO-220 Mechanical Drawing



TO-220 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	3.740	3.910	0.147	0.154
C	2.440	2.940	0.096	0.116
D	-	6.350	-	0.250
E	0.381	1.106	0.015	0.040
F	2.345	2.715	0.092	0.058
G	4.690	5.430	0.092	0.107
H	12.700	14.732	0.500	0.581
J	14.224	16.510	0.560	0.650
K	3.556	4.826	0.140	0.190
L	0.508	1.397	0.020	0.055
M	27.700	29.620	1.060	1.230
N	2.032	2.921	0.080	0.115
O	0.255	0.610	0.010	0.024
P	5.842	6.858	0.230	0.270