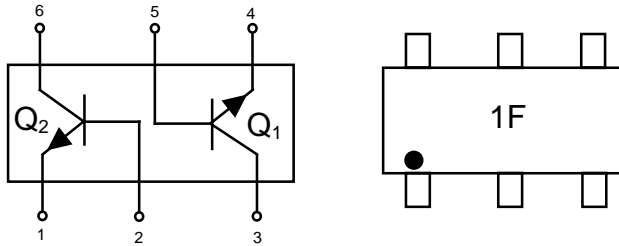
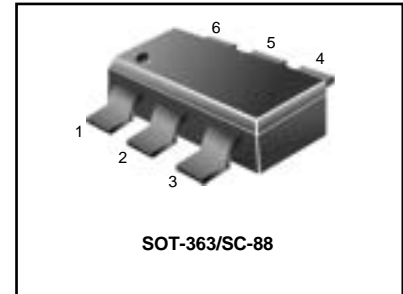


# Dual General Purpose Transistors

## NPN Duals

These transistors are designed for general purpose amplifier applications. They are housed in the SOT-363/SC-88 which is designed for low power surface mount applications.



### Q<sub>1</sub> MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector- Base Voltage	V <sub>CB0</sub>	50	V
Collector- Emitter Voltage	V <sub>CEO</sub>	45	V
Emitter- Base Voltage	V <sub>EBO</sub>	6	mA
Collector Current	I <sub>C</sub>	100	mA
Base Current	I <sub>B</sub>	20	mA

### Q<sub>2</sub> MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector- Base Voltage	V <sub>CB0</sub>	50	V
Collector- Emitter Voltage	V <sub>CEO</sub>	45	V
Emitter- Base Voltage	V <sub>EBO</sub>	6	mA
Collector Current	I <sub>C</sub>	100	mA
Base Current	I <sub>B</sub>	20	mA

### Q<sub>1</sub> Q<sub>2</sub> MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector Power Dissipation	P <sub>C</sub> *	380	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	- 55 ~ 150	°C

\* Total Raing. FR- 5 = 1.0 x 0.75 x 0.062 in



## Q<sub>1</sub> ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT.
Collector Cut - off Current	I <sub>CBO</sub>	V <sub>CB</sub> =30V, I <sub>E</sub> =0	-	-	0.1	μA
Emitter Cut - off Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0	-	-	0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =2mA	200	-	475	
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =5mA	-	-	0.60	V
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =10mA	100	-	-	MHz
Collector Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>e</sub> =0, f=1MHz	-	-	4.5	pF
Noise Figure	NF	V <sub>ce</sub> =5V, I <sub>c</sub> =0.2mA, f=1kHz, R <sub>s</sub> =2kΩ	-	-	10	dB

## Q<sub>2</sub> ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT.
Collector Cut - off Current	I <sub>CBO</sub>	V <sub>CB</sub> =30V, I <sub>E</sub> =0	-	-	0.1	μA
Emitter Cut - off Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0	-	-	0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =2mA	200	-	475	
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =5mA	-	-	0.60	V
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =10mA	100	-	-	MHz
Collector Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>e</sub> =0, f=1MHz	-	-	4.5	pF
Noise Figure	NF	V <sub>ce</sub> =5V, I <sub>c</sub> =0.2mA, f=1kHz, R <sub>s</sub> =2kΩ	-	-	10	dB

TYPICAL CHARACTERISTICS

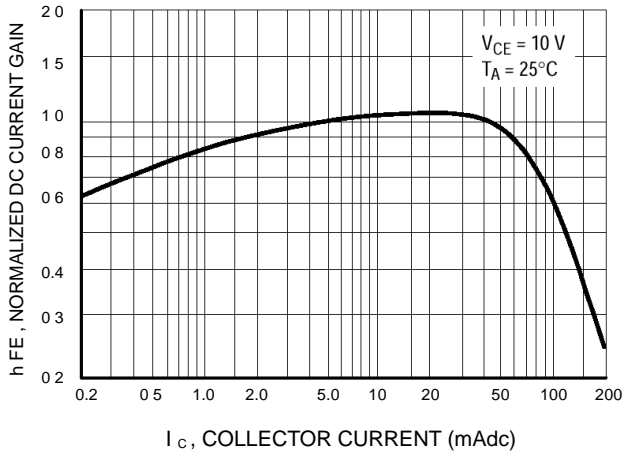


Figure 1. Normalized DC Current Gain

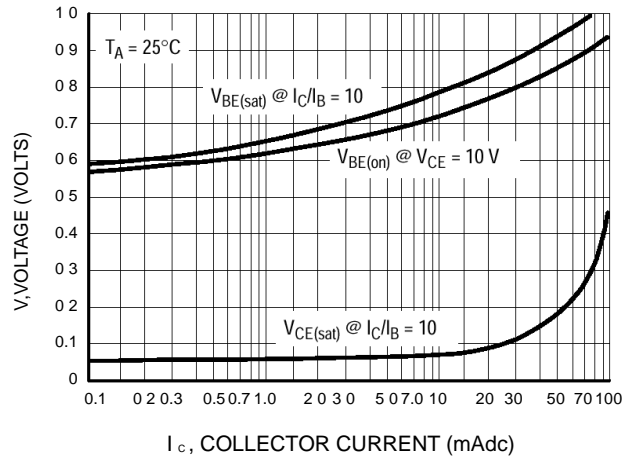


Figure 2. "Saturation" and "On" Voltages

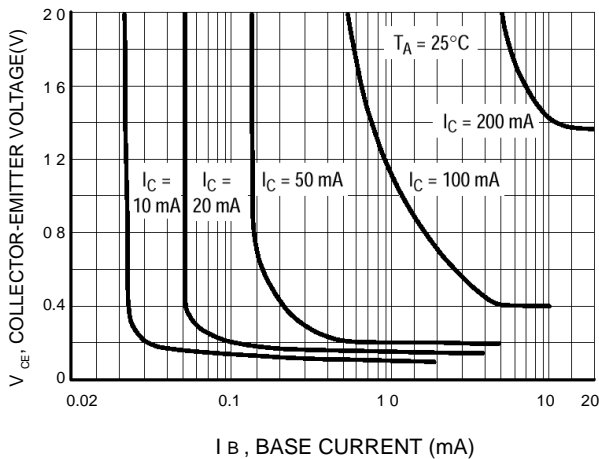


Figure 3. Collector Saturation Region

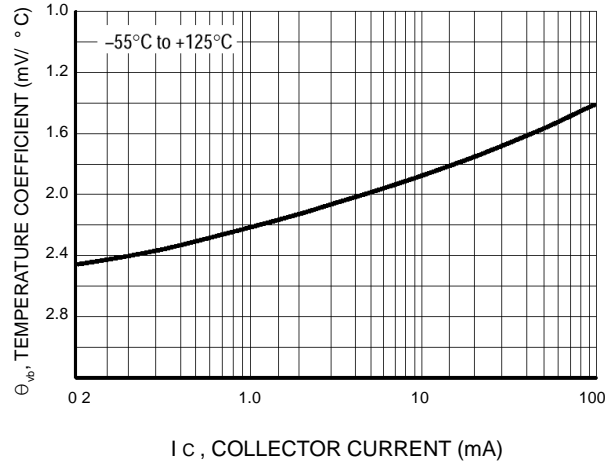


Figure 4. Base-Emitter Temperature Coefficient

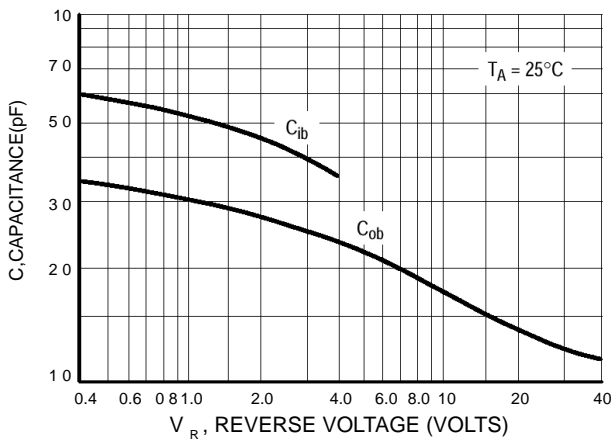


Figure 5. Capacitances

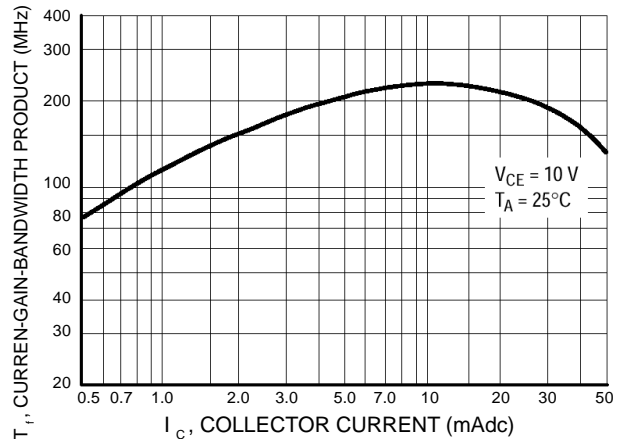


Figure 6. Current-Gain - Bandwidth Product

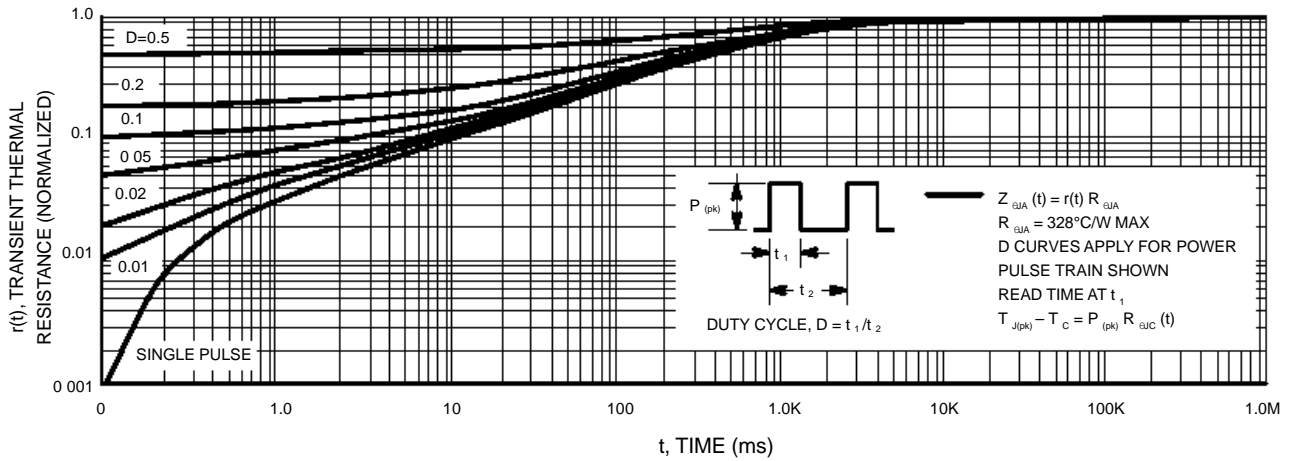


Figure 11. Thermal Response

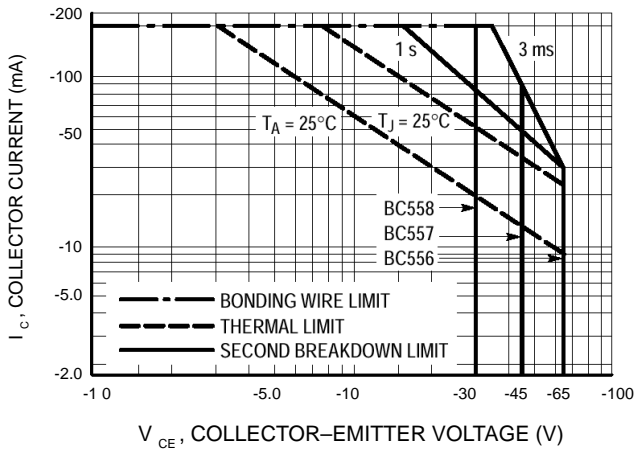
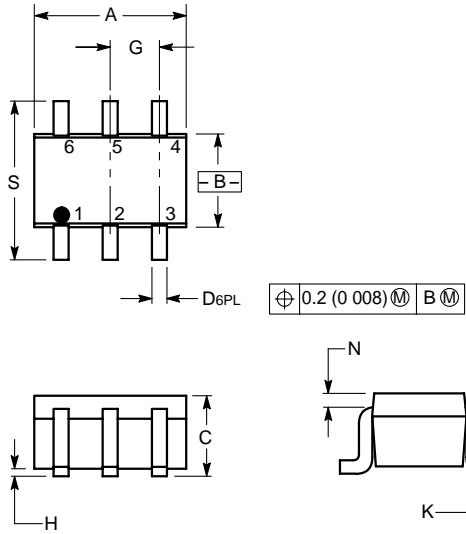


Figure 12. Active Region Safe Operating Area

The safe operating area curves indicate  $I_C - V_{CE}$  limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 12 is based upon  $T_{J(pk)} = 150^\circ\text{C}$ ;  $T_C$  or  $T_A$  is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided  $T_{J(pk)} \leq 150^\circ\text{C}$ .  $T_{J(pk)}$  may be calculated from the data in Figure 12. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary breakdown.

## SC-88/SOT-363



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

- PIN 1. EMITTER 2
- 2. BASE 2
- 3. COLLECTOR 1
- 4. EMITTER 1
- 5. BASE 1
- 6. COLLECTOR 2

