

NPN SILICON POWER TRANSISTORS

...designed for use in TV horizontal deflection output applications

FEATURES:

- * Low Collector-Emitter Saturation Voltage
 $V_{CE(sat)} = 1.0V(\text{Max}) @ I_C = 4.0A, I_B = 0.4A$
- * DC Current Gain
 $hFE = 30-150 @ I_C = 1.0A$
- * Large Collector Current Capability

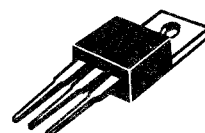
NPN

2SC2233

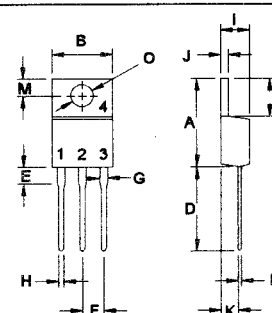
**4.0 AMPERE
SILICON POWER
TRANSISTORS
60 VOLTS
40 WATTS**

MAXIMUM RATINGS

Characteristic	Symbol	2SC2233	Unit
Collector-Emitter Voltage	V_{CEO}	60	V
Collector-Base Voltage	V_{CBO}	200	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous - Peak	I_C I_{CM}	4.0 10	A
Base current	I_B	2.0	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$



TO-220

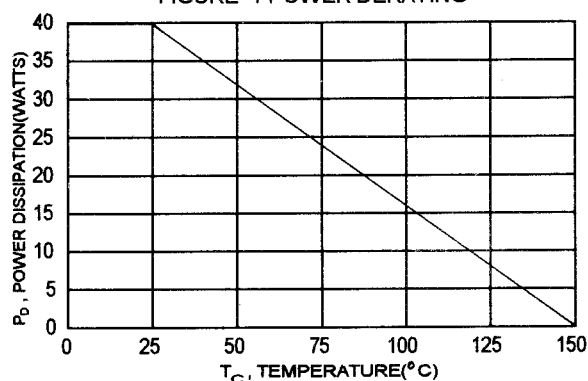


PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	3.125	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Voltage ($I_C = 50\text{ mA}$, $I_B = 0$)	V_{CEO}	60		V
Emitter-Base Voltage ($I_B = 1.0\text{ mA}$, $I_C = 0$)	V_{EBO}	5.0		V
Collector Cutoff Current ($V_{CB} = 170\text{ V}$, $I_E = 0$)	I_{CBO}		10	μA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)	I_{EBO}		10	μA

ON CHARACTERISTICS (1)

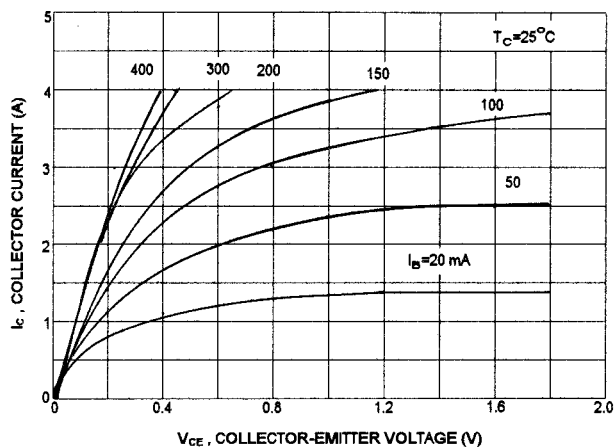
DC Current Gain ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 4.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	h_{FE}	30 20	150	
Collector-Emitter Saturation Voltage ($I_C = 4.0\text{ A}$, $I_B = 400\text{ mA}$)	$V_{CE(sat)}$		1.0	V
Base-Emitter Saturation Voltage ($I_C = 4.0\text{ A}$, $I_B = 400\text{ mA}$)	$V_{BE(sat)}$		1.5	V

DYNAMIC CHARACTERISTICS

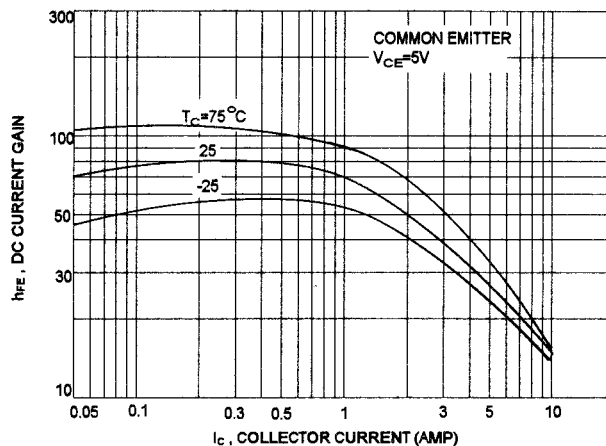
Current-Gain-Bandwidth Product ($I_C = 0.5\text{ A}$, $V_{CE} = 5.0\text{ V}$, $f = 1.0\text{ MHz}$)	f_T	5.0		MHz
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(1) Pulse Test: Pulse Width $\approx 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$

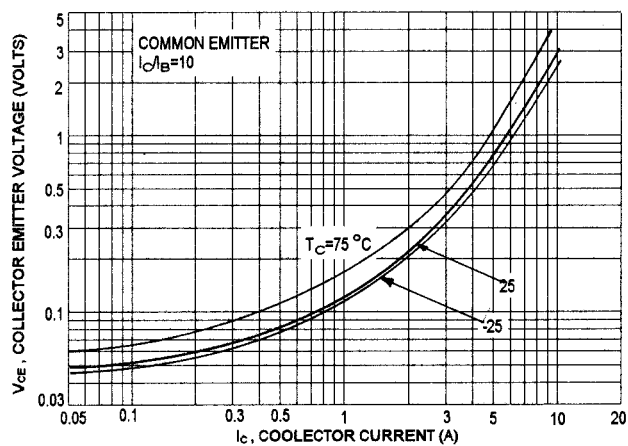
$I_C - V_{CE}$



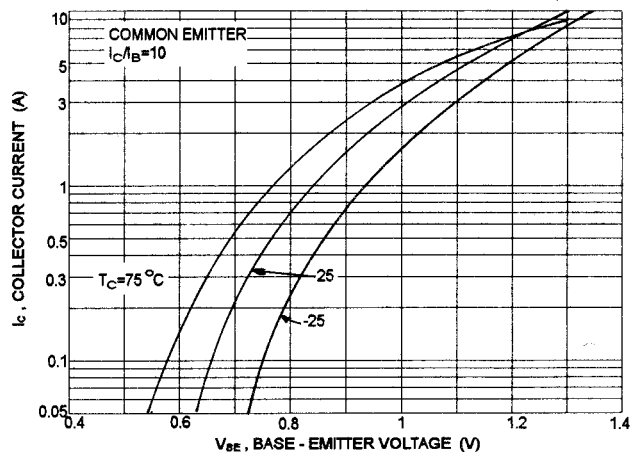
DC CURRENT GAIN



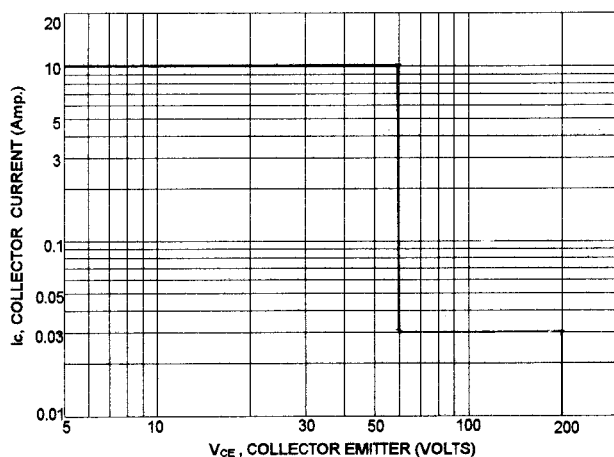
$V_{CE(sat)} - I_C$



$I_C - V_{BE}$



SAFE OPERATING AREA



$V_{CE(sat)} - I_B$

