

2N6233
2N6235

HIGH VOLTAGE NPN SILICON TRANSISTORS

... useful for high-voltage medium power applications such as switching regulators.

- High Collector-Emitter Sustaining Voltage –
 $V_{CE(sus)} = 225 \text{ Vdc} - 2N6233$
 $325 \text{ Vdc} - 2N6235$
- DC Current Gain – $h_{FE} = 25 \text{ to } 125 - I_C = 1.0 \text{ Adc}$
- Low Collector-Emitter Saturation Voltage
 $V_{CE(sat)} = 0.5 \text{ Vdc (Max) @ } I_C = 1.0 \text{ Adc}$
- High Frequency Response – $f_T = 20 \text{ MHz (Min)}$
- Fast Switching Times @ 1.0 Adc –
 $t_r = 0.5 \mu\text{s (Max)}$
 $t_f = 3.5 \mu\text{s (Max)}$
 $t_s = 0.5 \mu\text{s (Max)}$

5 AMPERE
POWER TRANSISTORS
NPN SILICON

225,275,325 VOLTS
50 WATTS

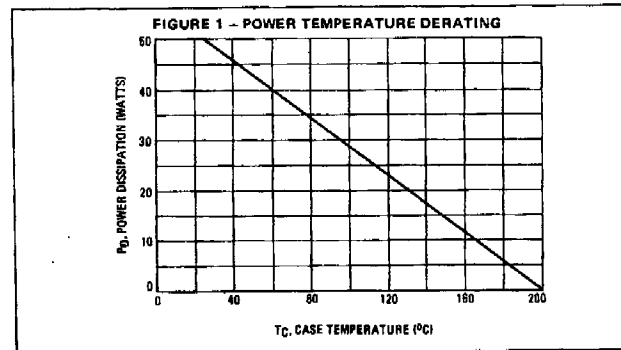
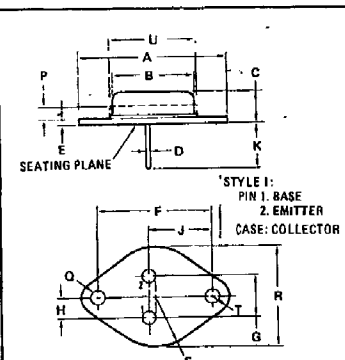
***MAXIMUM RATINGS**

Rating	Symbol	2N6233	2N6235	Unit
Collector-Emitter Voltage	V_{CEO}	225	325	Vdc
Collector-Base Voltage	V_{CB}	250	350	Vdc
Emitter-Base Voltage	V_{EB}	6.0		Vdc
Collector Current – Continuous Peak	I_C	5.0 10		Adc
Base Current	I_B	2.0		Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.286		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +200		°C

THERMAL CHARACTERISTICS

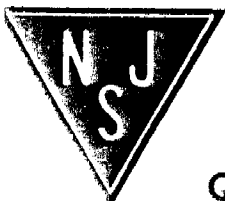
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.5	°C/W

*Indicates JEDEC Registered Data.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.94	0.250	0.348
D	0.71	0.86	0.028	0.034
E	1.27	1.81	0.050	0.071
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.89	0.570	0.586
K	9.14	–	0.360	–
P	–	1.27	–	0.050
Q	3.81	3.86	0.142	0.152
S	–	6.89	–	0.350
T	–	3.88	–	0.145
U	–	16.76	–	0.620

All JEDEC Dimensions and end Notes Apply.



*ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) (I _C = 20 mA, I _B = 0)	2N6233 2N6235 V _{CE(sus)}	225 325	—	V _{dc}
Collector Cutoff Current (V _{CE} = 225 V, I _B = 0) (V _{CE} = 325 V, I _B = 0)	2N6233 2N6235 I _{CEO}	— —	1.0 1.0	mA _{dc}
Collector Cutoff Current (V _{CE} = 250 V _{dc} , V _{EB(off)} = 1.5 V _{dc} , T _C = 150°C) (V _{CE} = 350 V _{dc} , V _{EB(off)} = 1.5 V _{dc} , T _C = 150°C)	2N6233 2N6235 I _{CEX}	— —	1.0 1.0	mA _{dc}
Collector Cutoff Current (V _{CB} = 280 V _{dc} , I _E = 0) (V _{CB} = 350 V _{dc} , I _E = 0)	2N6233 2N6235 I _{CBO}	— —	0.1 0.1	mA _{dc}
Emitter Cutoff Current (V _{BE} = 6.0 V _{dc} , I _C = 0)	I _{EBO}	—	0.1	mA _{dc}
ON CHARACTERISTICS (1)				
DC Current Gain (I _C = 0.1 A _{dc} , V _{CE} = 5.0 V _{dc}) (I _C = 1.0 A _{dc} , V _{CE} = 5.0 V _{dc}) (I _C = 3.0 A _{dc} , V _{CE} = 5.0 V _{dc})	h _{FE}	25 25 10	— 125 —	—
Collector-Emitter Saturation Voltage (I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc}) (I _C = 5.0 A _{dc} , I _B = 1.0 A _{dc})	V _{CE(sat)}	— —	0.5 2.5	V _{dc}
Base-Emitter Saturation Voltage (I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc}) (I _C = 5.0 A _{dc} , I _B = 1.0 A _{dc})	V _{BE(sat)}	— —	1.0 2.0	V _{dc}
Base-Emitter On Voltage (I _C = 1.0 A _{dc} , V _{CE} = 5.0 V _{dc})	V _{BE(on)}	—	1.0	V _{dc}
DYNAMIC CHARACTERISTICS				
Current-Gain Bandwidth Product (2) (I _C = 0.25 A _{dc} , V _{CE} = 10 V _{dc} , f _{test} = 10 MHz)	f _T	20	—	MHz
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 0.1 MHz)	C _{ob}	—	250	pF
SWITCHING CHARACTERISTICS				
Rise Time (V _{CC} = 200 V _{dc} , I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc})	t _r	—	0.5	μs
Storage Time (V _{CC} = 200 V _{dc} , I _C = 1.0 A _{dc} , I _{B1} = I _{B2} = 0.1 A _{dc})	t _s	—	3.5	μs
Fall Time (V _{CC} = 200 V _{dc} , I _C = 1.0 A _{dc} , I _{B1} = I _{B2} = 0.1 A _{dc})	t _f	—	0.5	μs

*Indicates JEDEC Registered Data.
 (1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2 0%.
 (2) $f_T = |h_{FE}| \cdot f_{test}$

FIGURE 2 - SWITCHING TIME TEST CIRCUIT

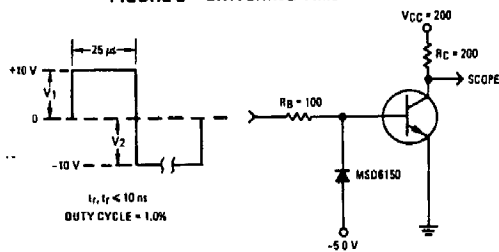


FIGURE 3 - TURN-ON TIME

