MOSPEC

SWITCHMODE SERIES
NPN SILICON POWER TRANSISTORS

These devices are designed for high-voltage,high-speed,power switching inductive circuits where fall time is critical.they are particularly,suited for 115 and 220 volt line operated SWITCHMODE applications such as:

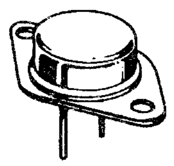
- Switching Regulators
- PWM inverters and Motor Controls
- Solenoid and Relay Drivers
- Deflection Circuits

Specification Features-

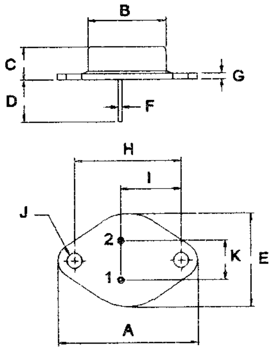
High Temperature Performance Specified for: Reversed Biased SOA with inductive loads Switching Times with inductive Loads Saturation Voltages, Leakage Currents.

NPN
2N6542
2N6543

5 AMPERE
NPN SILICON
POWER TRANSISTORS
300 - 400 VOLTS
100 WATTS



TO-3



PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

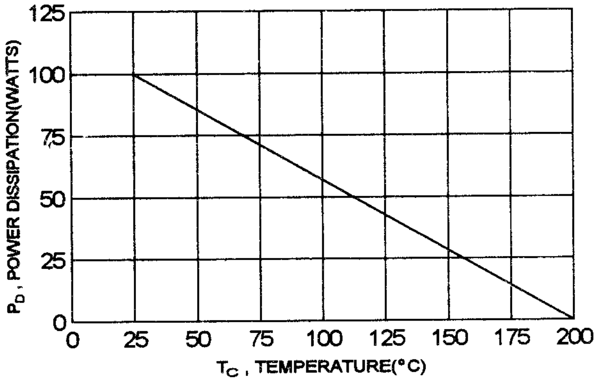
MAXIMUM RATINGS

Characteristic	Symbol	2N6542	2N6543	Unit
Collector-Emitter Voltage	$V_{CEO(sus)}$	300	400	V
Collector-Emitter Voltage	V_{CEV}	650	850	V
Collector-Base Voltage	V_{EBO}	8.0		V
Collector current - Continuous - Peak	I_C I_{CM}	5.0 10		A
Base current - Continuous	I_B	5		A
Emitter current - Continuous - Peak	I_E i_{EM}	10 20		A
Total Power Dissipation@T_C=25°C Derate above 25°C	P_D	100 0.57		W 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	Rθjc	1.75	°C/W

FIGURE -1 POWER DERATING



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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0)	2N6542 2N6543	$V_{CEO(sus)}$	300 400		V
Collector Cutoff Current		I_{CEV}			mA
(V_{CEV} = 650 V, $V_{BE(off)}$ = 1.5 V)	2N6542			0.5	
(V_{CEV} = 850 V, $V_{BE(off)}$ = 1.5 V)	2N6543			0.5	
(V_{CEV} = 650 V, $V_{BE(off)}$ = 1.5 V, T_c = 100°C)	2N6542			3.0	
(V_{CEV} = 850 V, $V_{BE(off)}$ = 1.5 V, T_c = 100°C)	2N6543			3.0	
Emitter Cutoff Current (V_{EB} = 8.0 V , I_C = 0)		I_{EBO}		1.0	mA
ON CHARACTERISTICS(1)					
DC Current Gain		hFE			
(I_C = 1.5 A, V_{CE} = 2.0 V)			12	60	
(I_C = 3.0 A, V_{CE} = 2.0 V)			7.0	35	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			V
(I_C = 3.0 A, I_B = 0.6 A)				1.0	
(I_C = 5.0 A, I_B = 1.0 A)				5.0	
Base-Emitter Saturation Voltage (I_C = 3.0 A, I_B = 0.6 A)		$V_{BE(sat)}$		1.4	V
DYNAMIC CHARACTERISTICS					
Current Gain Bandwidth (2) (I_C = 200 mA, V_{CE} = 10 V, f = 1.0 MHz)		f_T	6.0	35	MHz

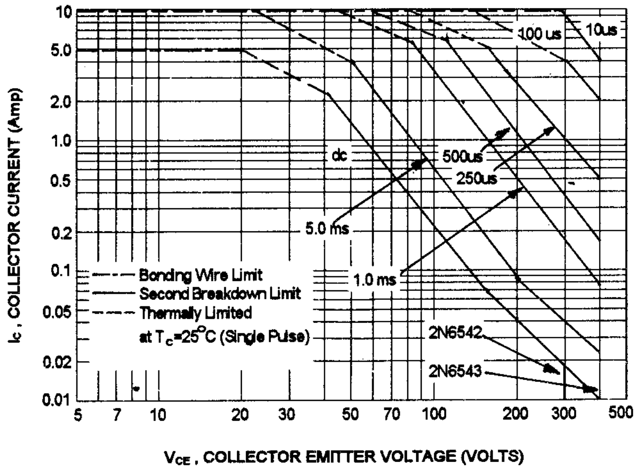
SWITCHING CHARACTERISTICS

Delay Time	V_{CC} = 250 V I_C = 3.0 A I_{B1} =-I_{B2} = 0.6 A t_p = 0.1 ms Duty Cycle ≤2.0%	t_d		0.05	us
Rise Time		t_r		0.7	us
Storage Time		t_s		4.0	us
Fall Time		t_f		0.8	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle ≤ 2.0%

(2) $f_T = |h_{fe}| \cdot f_{test}$

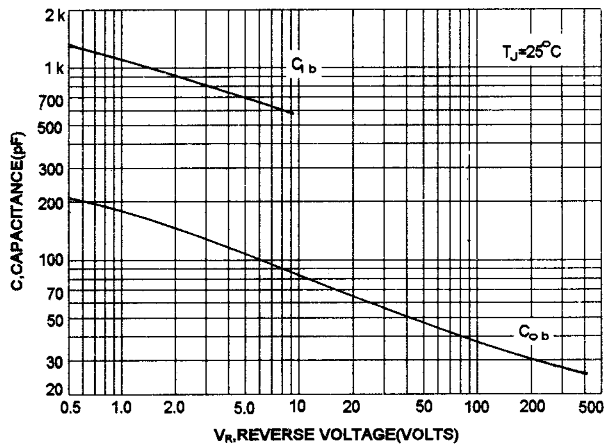
ACTIVE-REGION SAFE OPERATING AREA (SOA)



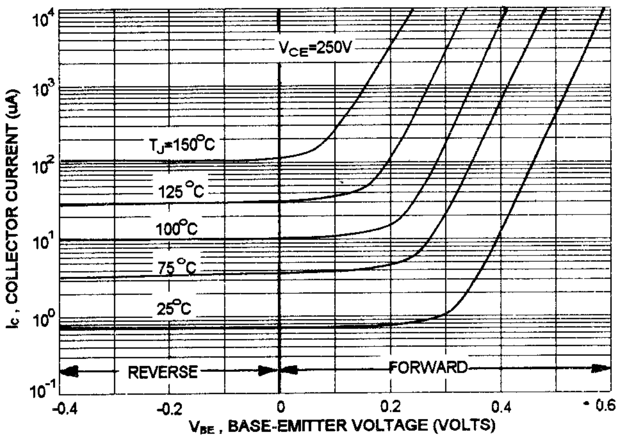
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$≤200°C,At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

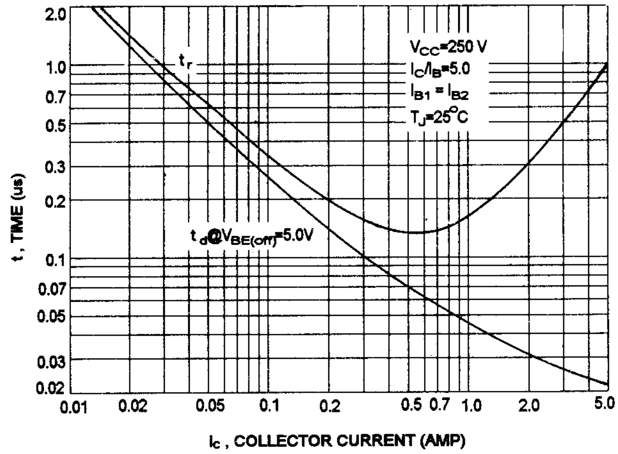
CAPACITANCES



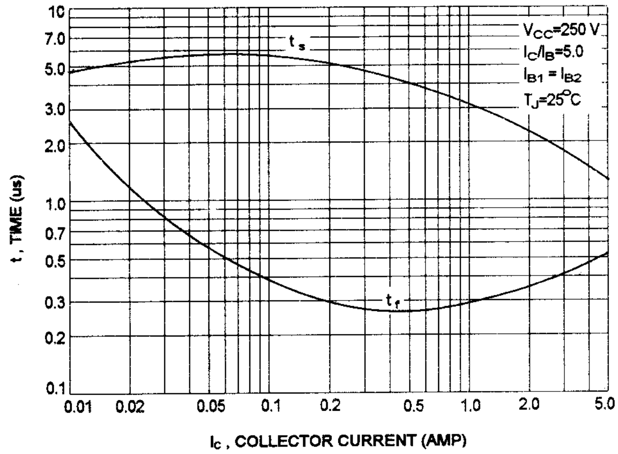
COLLECTOR CUT-OFF REGION



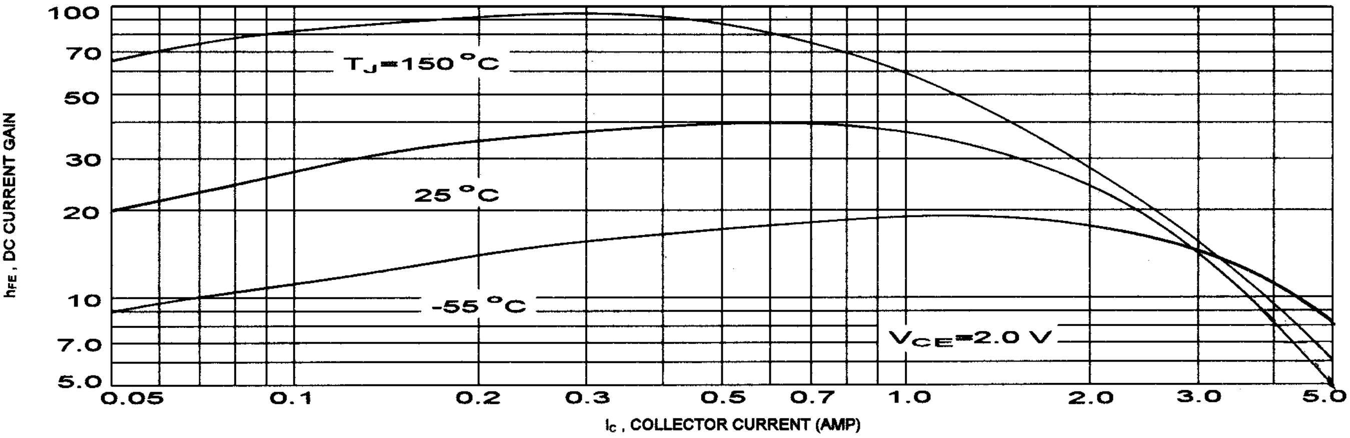
TURN-ON TIME



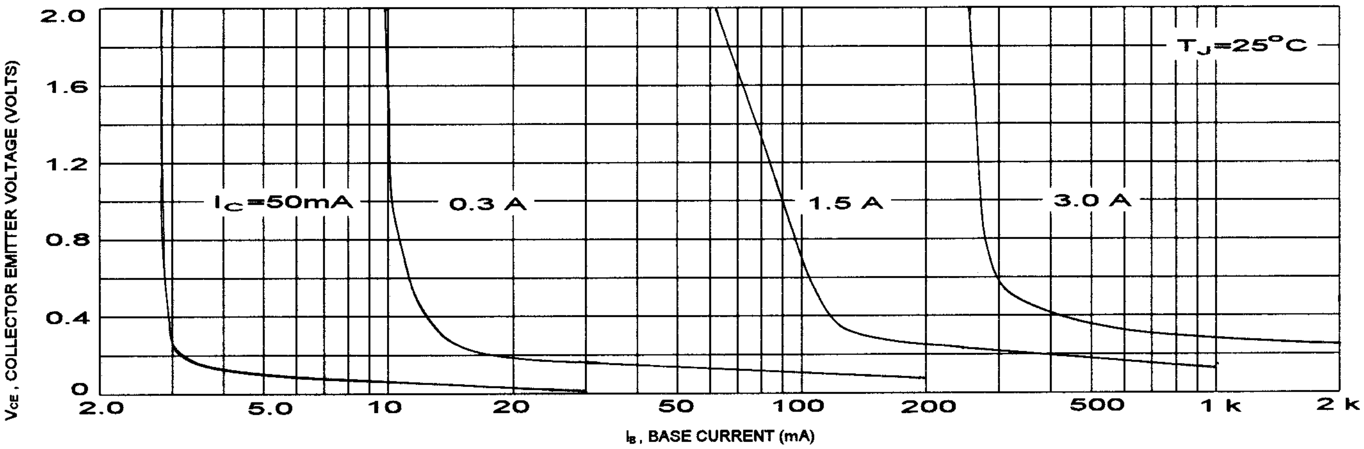
TURN-OFF TIME



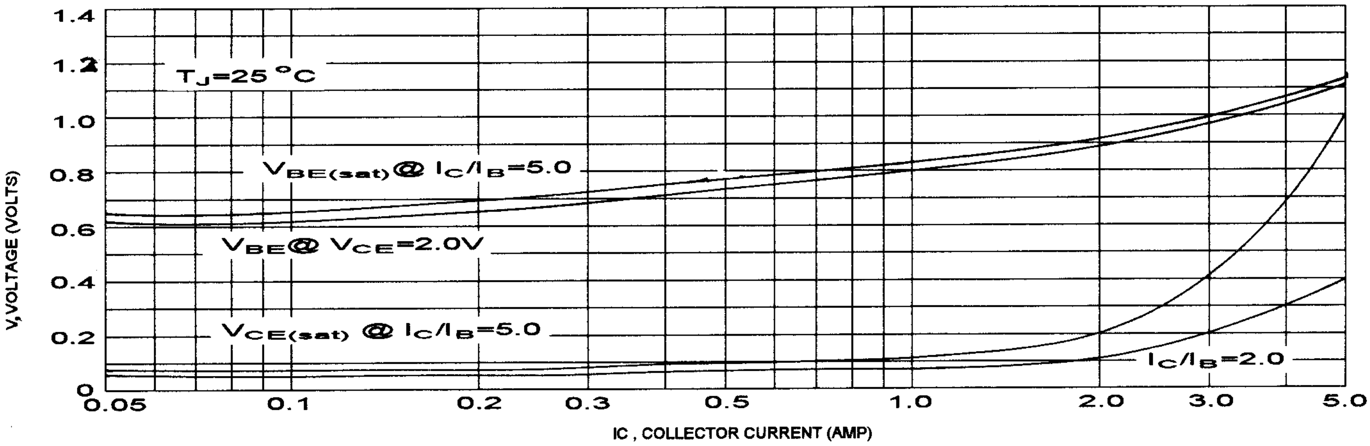
DC CURRENT GAIN



COLLECTOR SATURATION REGION



"ON"VOLTAGES



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