MOSPEC

SWITCHMODE SERIES
NPN SILICON POWER TRANSISTORS

The 2N6546 and 2N6547 transistors 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 switch-mode applications such as:

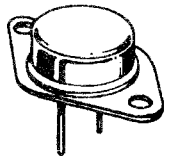
* Switching Regulators
* PWM inverters and Motor Controls
* Solenoid and Relay Drivers
* Deflection Circuits

Specification Features-

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

NPN
2N6546
2N6547

15 AMPERE
NPN SILICON
POWER TRANSISTORS
300 - 400 VOLTS
175 WATTS



TO-3

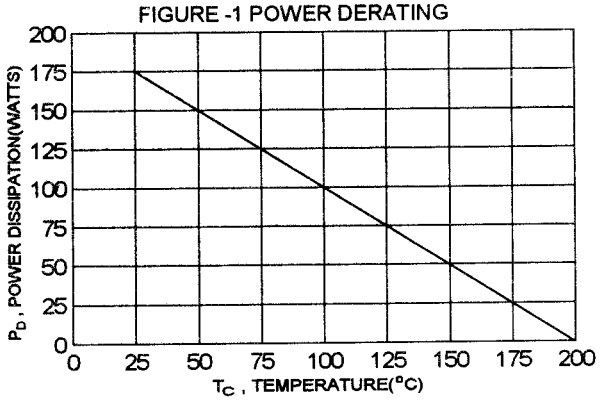
MAXIMUM RATINGS

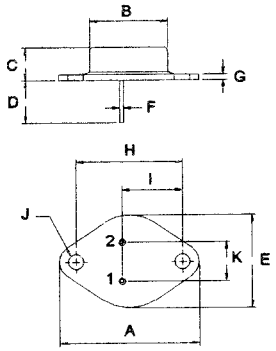
Characteristic	Symbol	2N6546	2N6547	Unit
Collector-Emitter Voltage	V_{CEO}	300	400	V
Collector-Emitter Voltage	V_{CEV}	650	850	V
Collector-Base Voltage	V_{EBO}	9.0		V
Collector current - Continuous - Peak	I_C I_{CM}	15 30		A
Base current - Continuous	I_B	10		A
Emitter current - Continuous - Peak	I_E I_{EM}	25 50		A
Total Power Dissipation@T_C=25°C Derate above 25°C	P_D	175 1.0		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	1.0	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

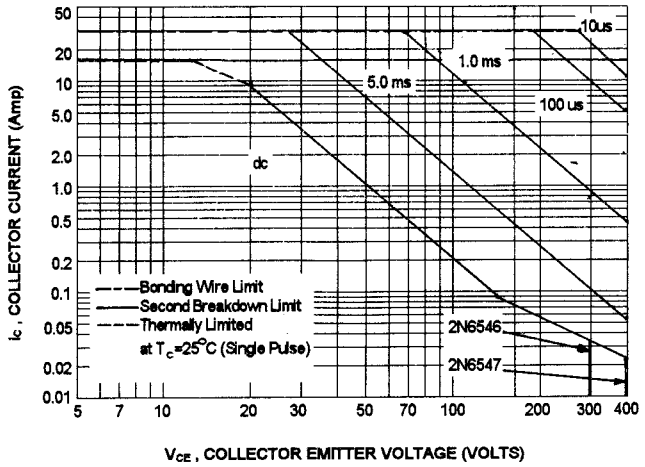
DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

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)	2N6546 2N6547	$V_{CEO(sus)}$	 300 400		V
Collector Cutoff Current (V_{CEV} = 650 V, $V_{BE(off)}$ = 1.5 V) (V_{CEV} = 850 V, $V_{BE(off)}$ = 1.5 V) (V_{CEV} = 650 V, $V_{BE(off)}$ = 1.5 V, T_C = 100°C) (V_{CEV} = 850 V, $V_{BE(off)}$ = 1.5 V, T_C = 100°C)	 2N6546 2N6547 2N6546 2N6547	I_{CEV}		 1.0 1.0 4.0 4.0	mA
Emitter Cutoff Current (V_{EB} = 9.0 V , I_C = 0)		I_{EBO}		 1.0	mA
ON CHARACTERISTICS(1)					
DC Current Gain (I_C = 5.0 A, V_{CE} = 2.0 V) (I_C = 10 A, V_{CE} = 2.0 V)		hFE	 12 6.0	 60 30	
Collector-Emitter Saturation Voltage (I_C = 10 A, I_B = 2.0 A) (I_C = 15 A, I_B = 3.0 A)		$V_{CE(sat)}$		 1.5 5.0	V
Base-Emitter Saturation Voltage (I_C = 10 A, I_B = 2.0 A)		$V_{BE(sat)}$		 1.6	V
DYNAMIC CHARACTERISTICS					
Current-Gain-Bandwidth Product (2) (I_C = 500 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 = 10 A I_{B1} =-I_{B2} = 2.0 A t_p = 0.1 ms Duty Cycle ≤2.0%	t_d		0.05	us
Rise Time		t_r		1.0	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) $f_T = |h_{fe}| \cdot f_{test}$

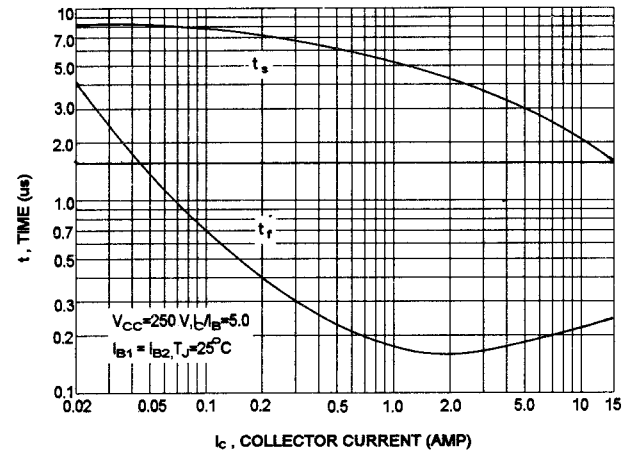
ACTIVE-REGION SAFE OPERATING AREA (SOA)



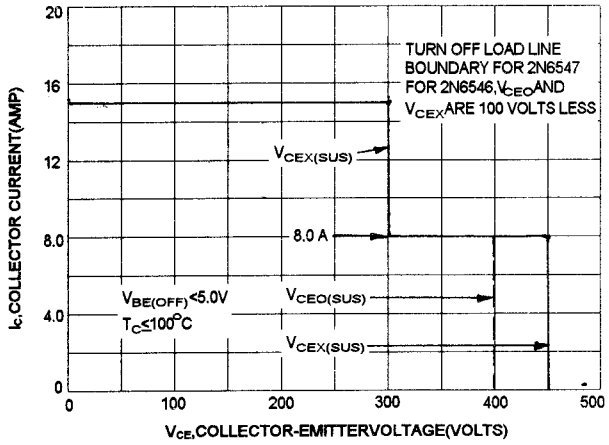
There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

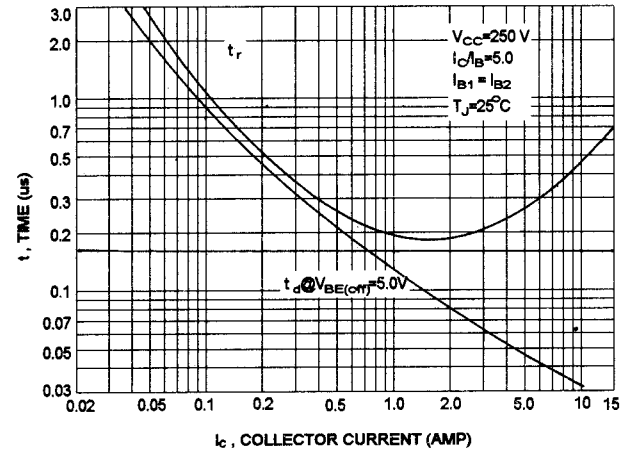
TURN-OFF TIME



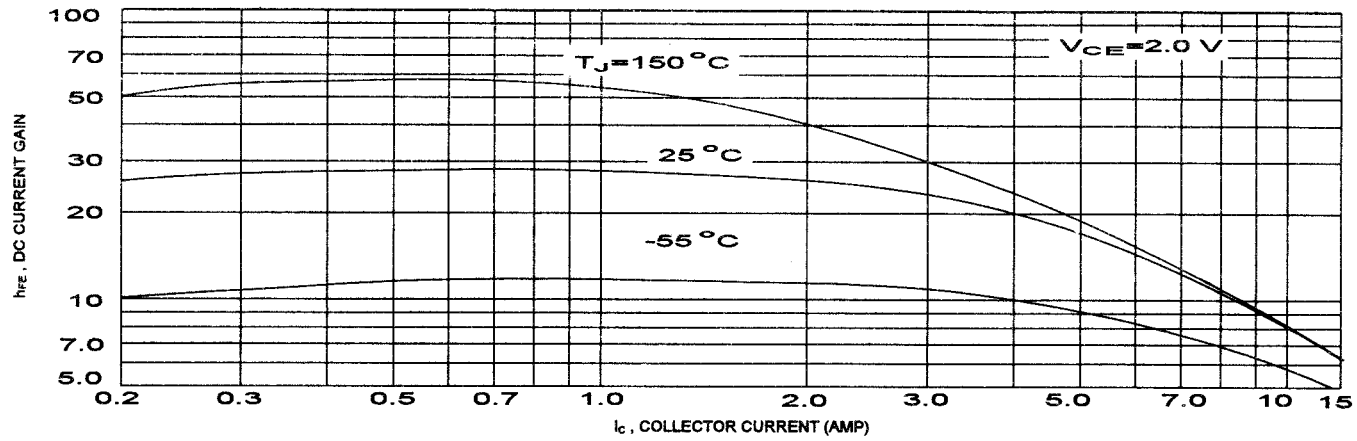
REVERSE BIAS SAFE OPERATING AREA



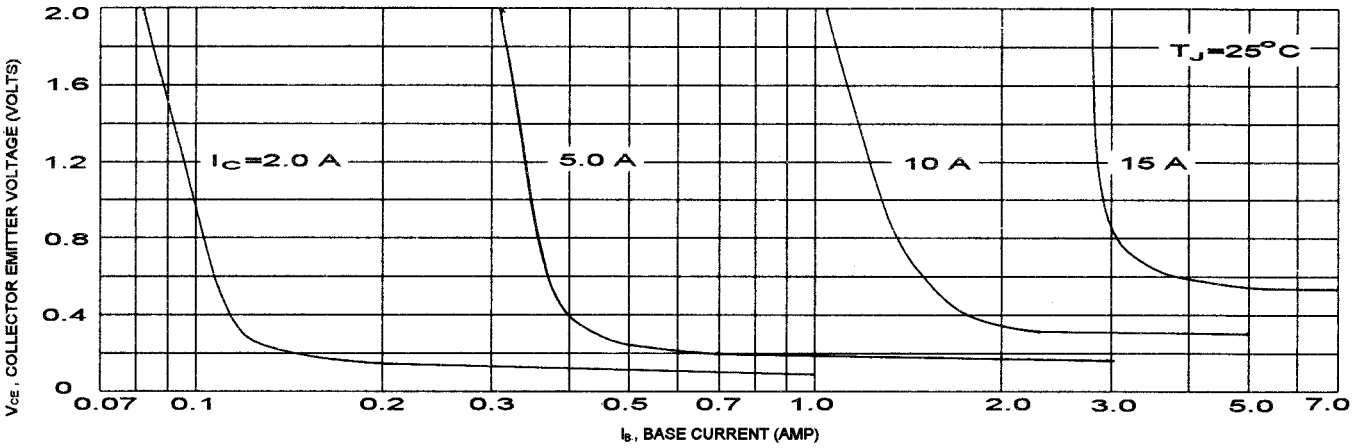
TURN-ON TIME



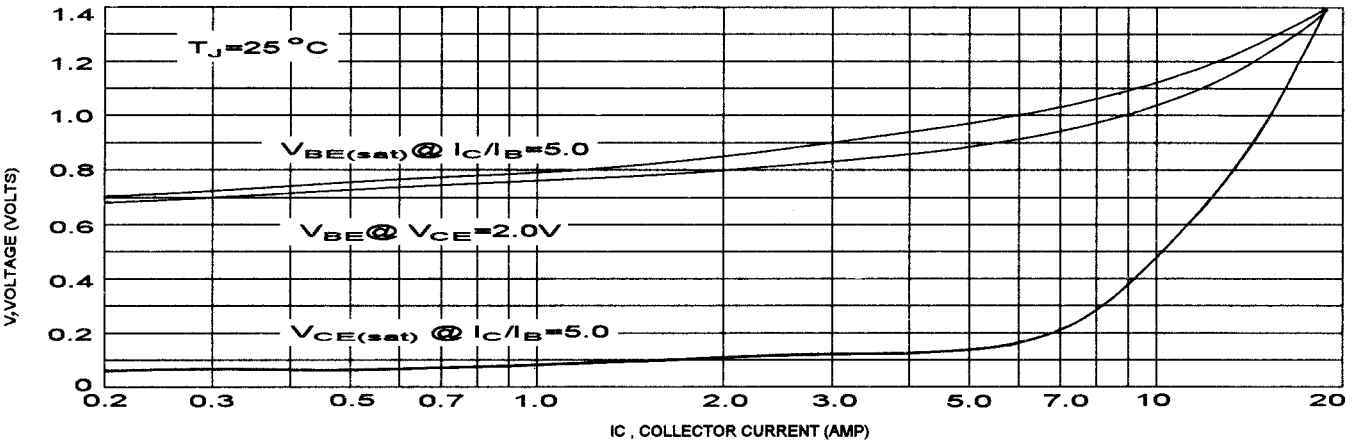
DC CURRENT GAIN



COLLECTOR SATURATION REGION



"ON"VOLTAGES



Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life (atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)