SWITCHMODE SERIES NPN POWER TRANSISTORS

... designed for use in high-voltage,high-speed,power switching in inductive circuit, they are particularly suited for 115 and 220 V switchmode applications such as switching regulator's,inverters,DC -DC and conveter

NPN

2N6738
2N6739
2N6740

FEATURES:

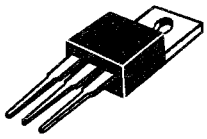
*Collector-Emitter Sustaining Voltage-
V_{CEX} = 350 V to 450 V
* Collector-Emitter Saturation Voltage -
$V_{CE(sat)}$ = 2.0 V (Max.) @ I_C = 5.0 A, I_B = 1.0 A
* Switching Time - t_f =0.5 us (Max.) @ I_C =5.0 A

Boca Semiconductor Corp
BSC
http://www.bocasemi.com

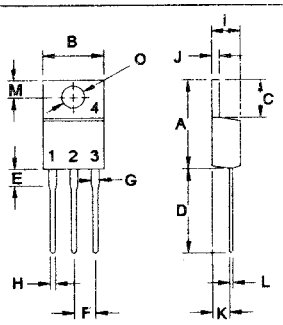
8.0 AMPERE
SILICON POWER
TRANASISTORS
300-400 VOLTS
100 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	2N6738	2N6739	2N6740	Unit
Collector-Emitter Voltage V_{BE}=-1.5V	V_{CEV}	450	550	650	V
Collector-Emitter Voltage V_{BE}=-1.5V	V_{CEX}	350	400	450	V
Collector-Emitter Voltage	V_{CEO}	300	350	400	V
Emitter-Base Voltage	V_{EBO}	8.0			V
Collector Current - Continuous - Peak	I_C I_{CM}	8.0 10			A
Base current	I_B	4.0			A
Total Power Dissipation @T_C = 25°C Derate above 25°C	P_D	100 0.8			W W/°C
Operating and Storage Junction Temperature Range	T_J , T_{STG}	-65 to 150			°C



TO-220



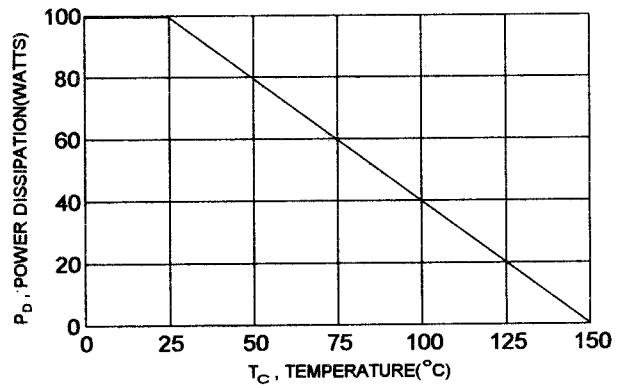
PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	Rθjc	1.25	°C/W

FIGURE -1 POWER DERATING



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

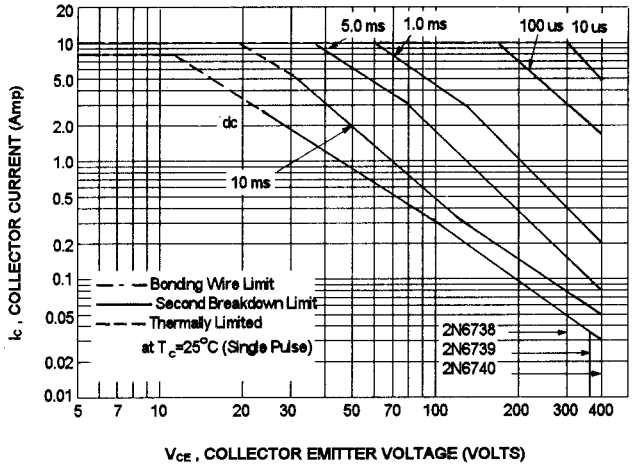
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Voltage (I_C= 200 mA, I_B= 0) 2N6738 / 2N6739 / 2N6740	$V_{CEO(sus)}$	300 / 350 / 400		V
Collector Cutoff Current (V_{CEV}= Rated Value, $V_{BE(off)}$=-1.5 V) (V_{CEV}= Rated Value, $V_{BE(off)}$=-1.5 V , T_C=100 °C)	I_{CEV}		0.1 / 1.0	mA
Emitter Cutoff Current (V_{EB}= 8.0 V, I_C= 0)	I_{EBO}		2.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain (I_C= 5.0 A, V_{CE}= 3.0 V)	hFE	10	40	
Collector-Emitter Saturation Voltage (I_C= 5.0 A, I_B= 1.0 A) (I_C= 8.0 A, I_B= 4.0 A)	$V_{CE(sat)}$		1.0 / 2.0	V
Base-Emitter Saturation Voltage (I_C= 5.0 A, I_B= 1.0 A)	$V_{BE(sat)}$		1.6	V
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product (2) (I_C = 200 mA , V_{CE} = 10 V ,f = 1.0 MHz)	f_T	10	60	MHz

SWITCHING CHARACTERISTICS

Delay Time	V_{CC} = 125 V, I_C = 5.0 A	t_d		0.1	us
Rise Time	I_{B1} = -I_{B2} =1.0A	t_r		0.4	us
Storage Time	t_p = 20 us,Duty Cycle ≤1.0%	t_s		2.5	us
Fall Time		t_f		0.5	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle ≦ 2.0%
(2) $f_T = |h_{fe}| \cdot f_{test}$

FIG-2 ACTIVE REGION SAFE OPERATING AREA



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 FIG-2 is base on T_C=25 °C; $T_{J(PK)}$ is variable depending on power level.second breakdown pulse limi -ts are valid for duty cycles to 10% provided $T_C \geq$25°C,At high case temperatures,thermal limitation will reduce the power that can be handled to values less than the limita-tions imposed by second breakdown.

FIG-3 "ON" VOLTAGES

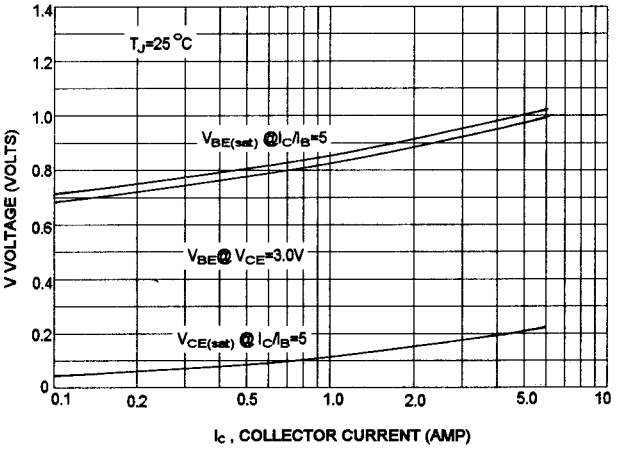


FIG-4 DC CURRENT GAIN

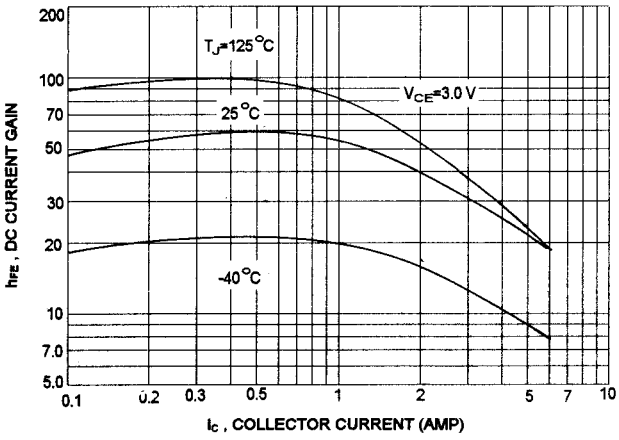


FIG-5 TURN-ON TIME

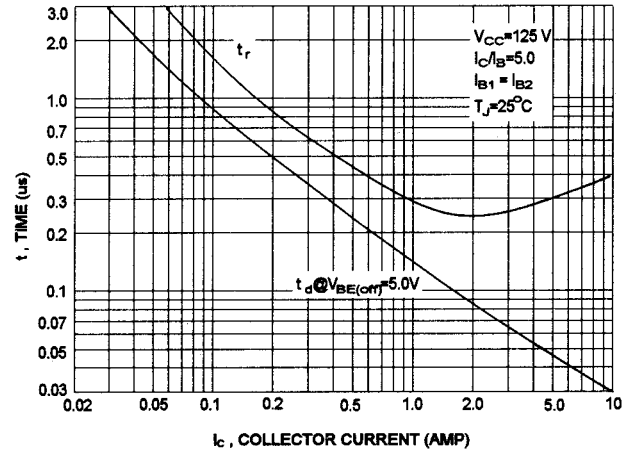


FIG-6 TURN-OFF TIME