

NPN POWER TRANSISTOR

 **Lead Free Package and Finish**

Description:

BTQ6012, silicon NPN power switch transistor, is Manufactured using planar technology, terminal Guarding structure and minority life-time controlling technology for high voltage capability, high switching speeds and reliability.

Package: TO-126, Green material.

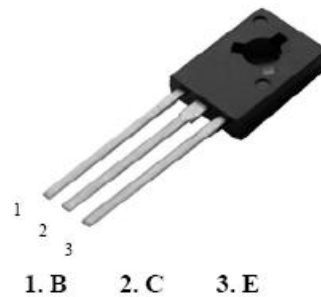
Features:

- Low Leakage Current
- Low Switching Loss
- Minimum Lot-to-Lot For Reliability Operation
- Low Spread Of Dynamic Parameters

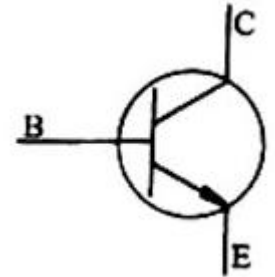
Applications:

The device is mainly used in power switch circuit of adapter and charger. The device is the key component of the electronic products mentioned above.

BV_{CEO}	P_{tot}	I_C
530V	50W	1.2A



TO-126 Not to Scale



Equivalent Circuit

Ordering Information

PART NUMBER	PACKAGE	BRAND
BTQ6012	TO-126	BTQ6012

Absolute Maximum Ratings $T_c = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Maximum	Units
		BTQ6012	
V_{CBO}	Collector-to-Base Voltage	900	V
V_{CEO}	Collector-to-Emitter Voltage ($I_B=0$)	530	
V_{EBO}	Emitter -to-Base Breakdown Voltage ($I_C=0$)	9.0	
I_C	Collector Current	1.2	A
P_{tot}	Total Dissipation at $T_{amb}=25^\circ\text{C}$	50	W
T_J	Operation Junction	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55~150	

Caution: Stresses greater than those listed in "Absolute Maximum Ratings" Table may cause permanent damage to the device.

Thermal Resistance

Symbol	Parameter	Maximum	Units	Test Condition
		BTQ6012		
$R_{\theta JC}$	Junction-to-Case	2.5	$^\circ\text{C/W}$	Water cooled heat sink, P_D adjusted for a peak junction temperature of $+150^\circ\text{C}$.

Electrical Characteristics (T_J= 25°C unless otherwise specified):

Symbol	Parameter	Rating			Units	Test Conditions
		Min.	Typ.	Max.		
I _{CBO}	Collector-to-Base Cut-off Current	--	--	0.1	mA	V _{CB} =900V, I _E =0A
I _{CEO}	Collector-to-Emitter Cut-off Current	--	--	1.0		V _{CE} =530V, I _E =0A
I _{EBO}	Emitter-to-Base Cut-off Current	--	--	0.1		V _{BE} =9V, I _C =0A
V _{CBO}	Collector-to-Base Voltage	900	--	--	V	I _C =0.1mA
V _{CEO}	Collector-to-Emitter Voltage	530	--	--		I _C =1.0mA
V _{EBO}	Emitter-to-Base Voltage	9	--	--		I _E =0.1mA
h _{FE}	DC Current Gain (Common Emitter)	15	--	35		V _{CE} =5V, I _C =0.3A *
h _{FE1} / h _{FE2}	Ratio Between h _{FE1} of Low Current and h _{FE2} of High Current	0.75	0.9			h _{FE1} : V _{CE} =5V, I _C =5mA; h _{FE2} : V _{CE} =5V, I _C =0.2A
V _{CEsat}	Collector-to-Emitter Saturation Voltage	--	0.5	1.0	V	I _C =0.5A, I _B =0.1A *
V _{BESat}	Base-to-Emitter Saturation Voltage	--	1.0	1.5		I _C =0.5A, I _B =0.1A *
t _s	Storage Time	1.0	--	3.0	us	UI9600, I _C =0.5A (Resistive Load)
t _r	Rise Time	--	--	2.0		
t _f	Fall Time	--	1.2	1.5		
f _T	Characteristic Frequency	5	--	--	MHz	V _{CE} =10V, I _C =0.1A, f=1MHz
*Pulsed: Pulse duration ≤ 300us, duty cycle ≤ 2%						

Characteristics Curve:

Fig-1 Safe Operation Area(DC)

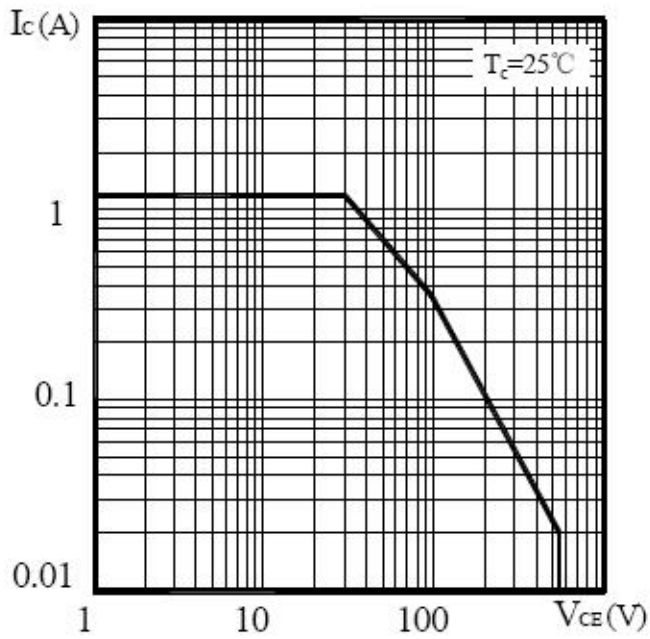


Fig-3 Typical Output Characteristics

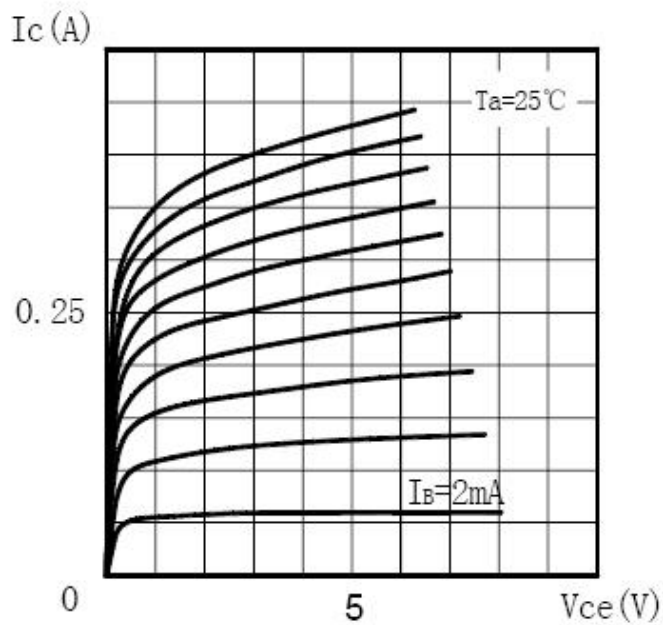


Fig-2 Maximum Power Dissipation vs Case Temperature

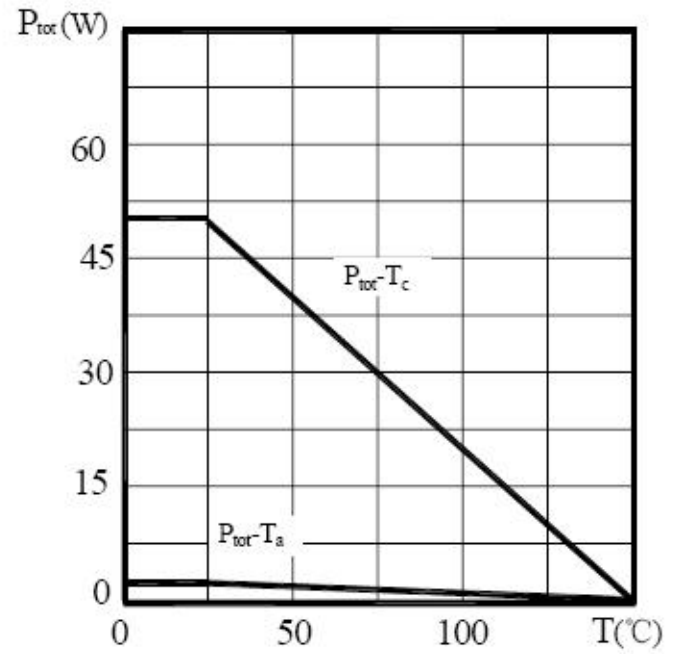


Fig-4 DC Current Gain vs Collect Current

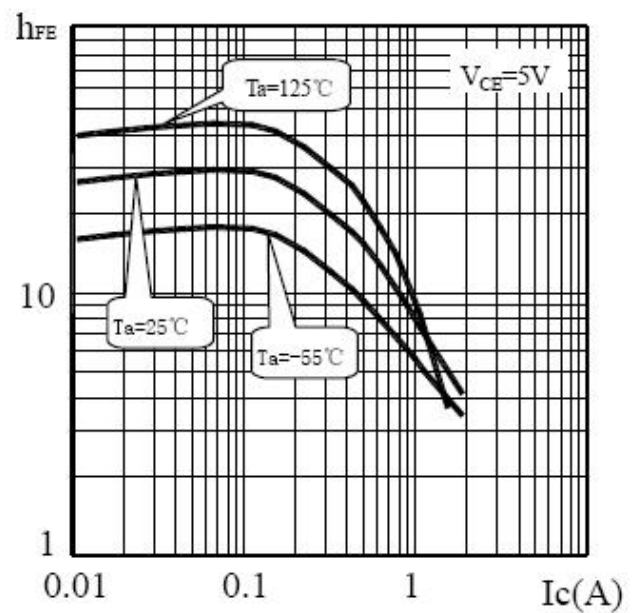


Fig-5 V_{CEsat} vs Collect Current Curve

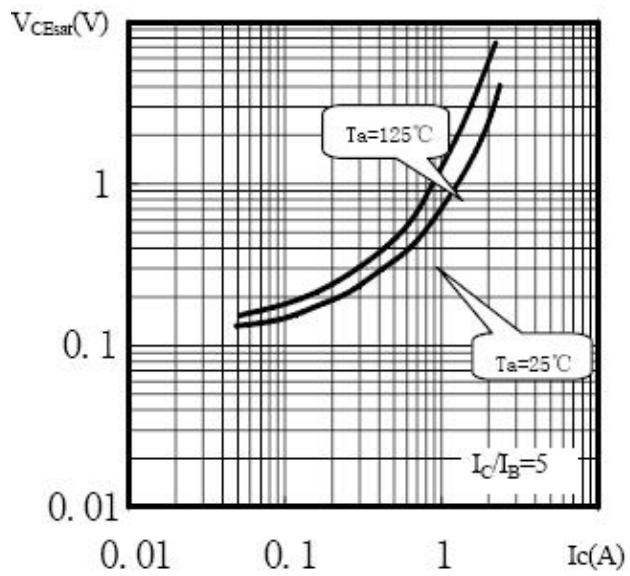


Fig-6 V_{BEsat} vs Collect Current Curve

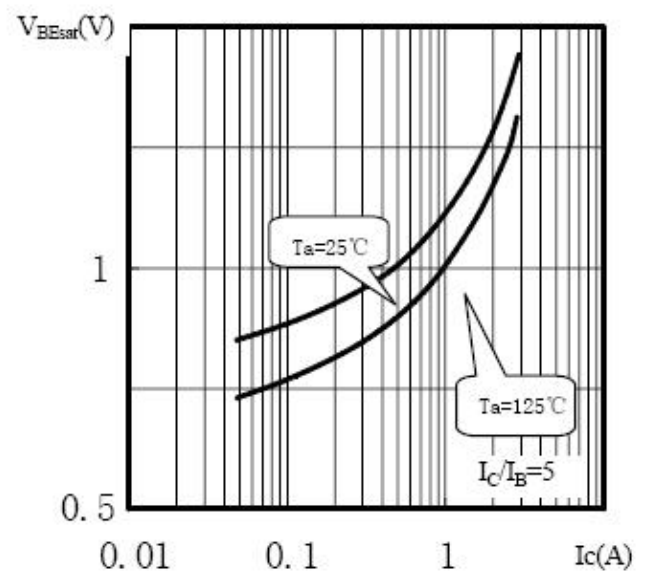
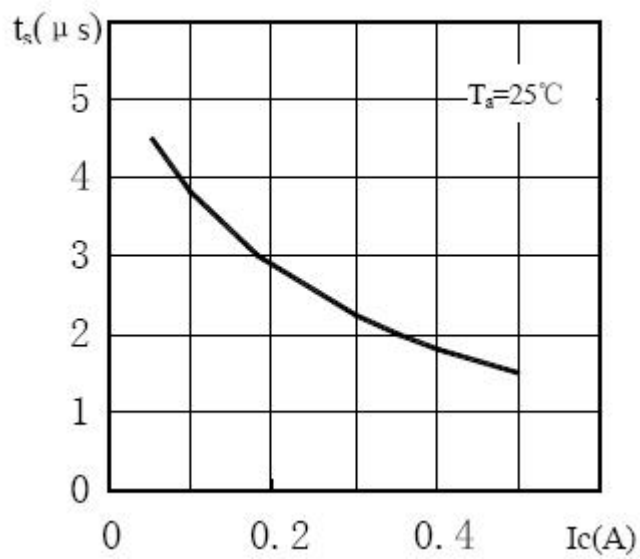
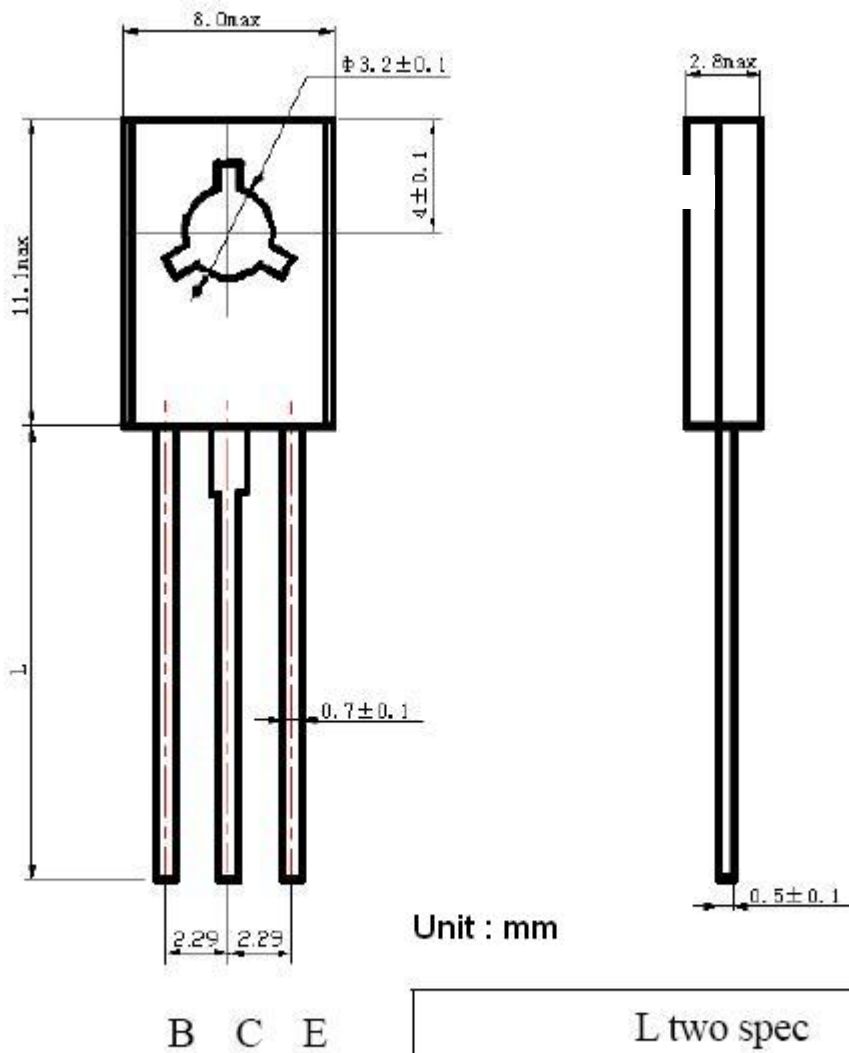


Fig-3 t_s vs Collect Current Curve



Package Information:



Package : TO-126

Part's Name	Hazardous Substance					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Limit	≤0.1%	≤0.1%	≤0.01%	≤0.1%	≤0.1%	≤0.1%
Lead Frame	○	○	○	○	○	○
Molding Compound	○	○	○	○	○	○
Chip	○	○	○	○	○	○
Wire Bonding	○	○	○	○	○	○
Solder	×	○	○	○	○	○
Note	○: Means the hazardous material is under the criterion of SJ/T11363-2006. ×: Means the hazardous material exceeds the criterion of SJ/T11363-2006. The plumbum element of solder exist in products presently, but within the allowed range of Eurogroup's RoHS.					

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 - b. support or sustain life,
 - c. whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
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