2SD2012

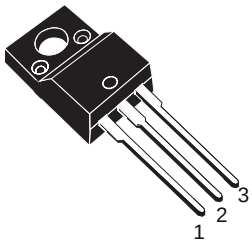
NPN SILICON POWER TRANSISTOR

- HIGH DC CURRENT GAIN
- LOW SATURATION VOLTAGE
- INSULATED PACKAGE FOR EASY MOUNTING

APPLICATIONS
- GENERAL PURPOSE POWER AMPLIFIERS
- GENERAL PURPOSE SWITCHING

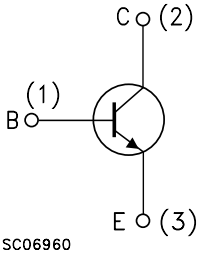
DESCRIPTION
The 2SD2012 is a silicon NPN power transistor housed in TO-220F insulated package.

It is inteded for power linear and switching applications.



TO-220F

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	60	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	60	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	3	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	6	A
I_B	Base Current	0.5	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	25	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to Exernal Heatsink	1500	V
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

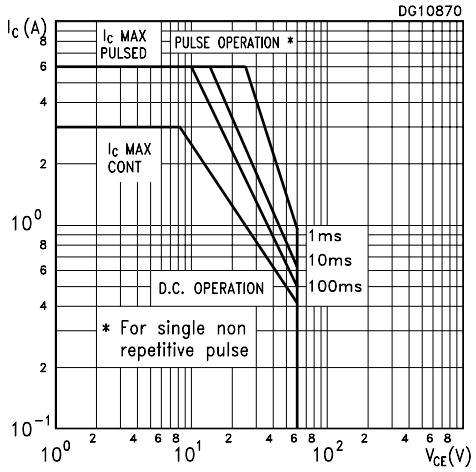
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	5	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

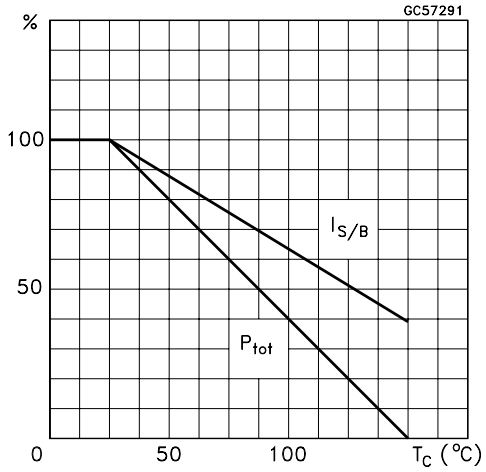
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = 60 V			100	µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 7 V			100	µA
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage (I_B = 0)	I_C = 50 mA	60			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 2 A I_B = 0.2 A		0.4	1	V
V_{BE}*	Base-Emitter Voltage	I_C = 0.5 A V_{CE} = 5 V		0.75	1	V
h_{FE}*	DC Current Gain	I_C = 0.5 A V_{CE} = 5 V I_C = 2 A V_{CE} = 5 V	100 20		320	
f_T	Transition frequency	V_{CE} = 5 V I_C = 0.5 A		3		MHz
C_{CBO}	Collector-Base Capacitance	V_{CB} = 10 V I_E = 0 f = 1 MHz		35		pF

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

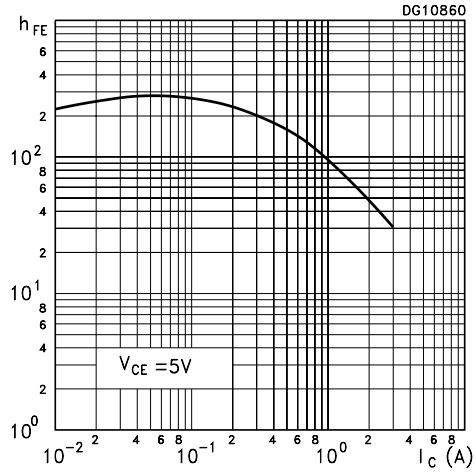
Safe Operating Area



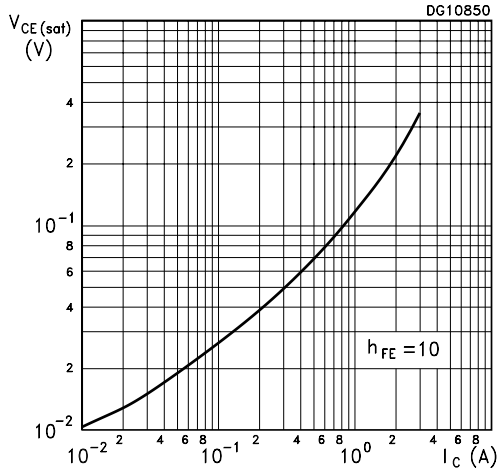
Derating Curve



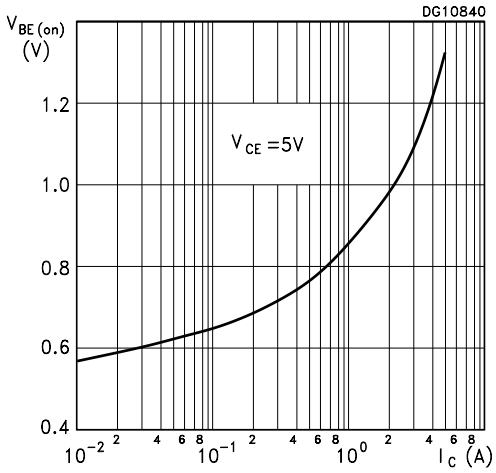
DC Current Gain



Collector Emitter Saturation Voltage



Base Emitter On Voltage



TO-220F MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.50		4.90	0.177		0.193
B	2.34		2.74	0.092		0.108
D	2.56		2.96	0.101		0.117
E	0.45	0.50	0.60	0.018	0.020	0.024
F	0.70		0.90	0.028		0.035
F1			1.47			0.058
G		5.08			0.200	
G1	2.34	2.54	2.74	0.092	0.100	0.108
H	9.96		10.36	0.392		0.408
L2		15.80			0.622	
L4	9.45		10.05	0.372		0.396
L6	15.67		16.07	0.617		0.633
L7	8.99		9.39	0.354		0.370
L8		3.30			0.130	
Dia	3.08		3.28	0.121		0.129