GE13003

NPN SILICON POWER TRANSISTOR

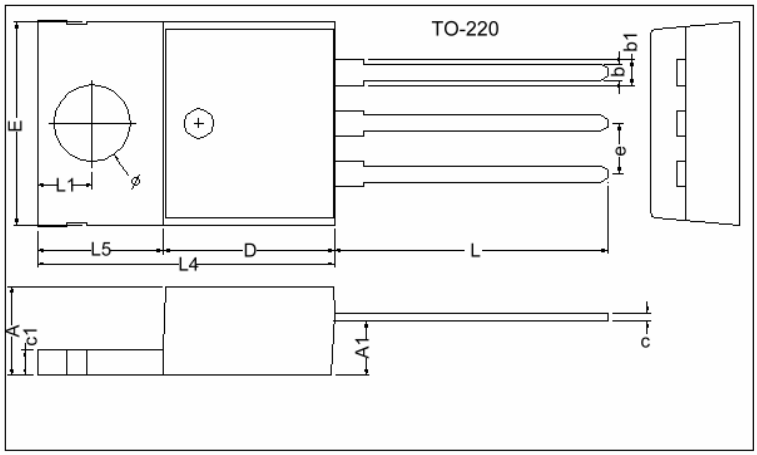
Description

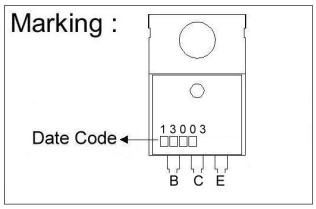
The GE13003 is designed for high voltage, high speed power switching inductive circuit where fall time is critical. It is particularly suited for 115 and 220v Switch-mode.

Features

- Inductive Switching Matrix 0.5~1.5Amp, 25 and 100℃...tc @ 1A, 100℃ is 290ns(Typ)
- 700V Blocking Capability
- SOA and Switching Application Information

Package Dimensions





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c1	1.25	1.45
b	0.76	1.00	b1	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L1	2.60	2.89
L4	14.7	15.3	Ø	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

Absolute Maximum Ratings at Ta = 25℃

Parameter	Symbol	Ratings	Unit
Junction Temperature	Tj	+150	℃
Storage Temperature	Tstg	-55 ~ +150	℃
Collector to Emitter Voltage	$V_{CEO(sus)}$	400	V
Collector to Emitter Voltage	V_{CEO}	700	V
Emitter to Base Voltage	V_{EBO}	9	V
Collector Current -Continuous -Peak(1)	I_C I_{CM}	1.5 3.0	A
Base Current -Continuous -Peak(1)	I_B I_{BM}	0.75 1.5	A
Emitter Current -Continuous -Peak(1)	I_E I_{EM}	2.25 4.5	A
Total Power Dissipation at Ta=25℃ Derate above 25℃	PD	1.4 11.2	W mW/℃
Total Power Dissipation at Tc=25℃ Derate above 25℃	PD	40 320	W mW/℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-ambient	$R\theta_{JA}$	89	℃/W
Thermal Resistance, Junction-case	$R\theta_{JC}$	3.12	℃/W
Maximum Lead Temperature for Soldering Purposes:1/8" from Case for 5 Seconds	T_L	275	℃

(1)Pulse Test: Pulse Width=5ms, Duty Cycle≦10%

Electrical Characteristics(Tc = 25℃ Unless otherwise specified)

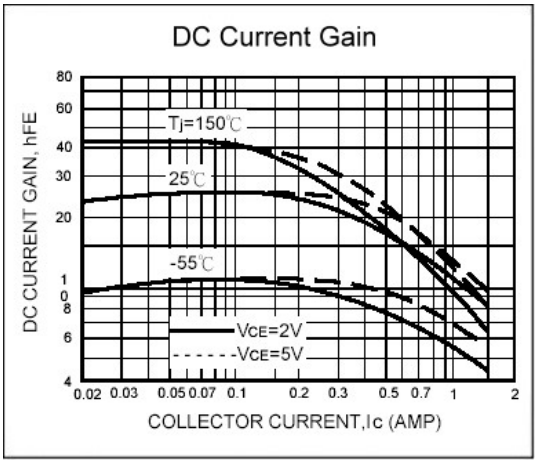
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*Off Characteristics(1)						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	400	-	-	V	I_C=10mA , I_B=0
Collector Cutoff Current	I_{CEV}	-	-	1 5	mA	V_{CEV}=Rated Value, $V_{BE(off)}$=1.5V V_{CEV}=Rated Value, $V_{BE(off)}$=1.5V, T_C=100℃
Emitter Cutoff Current	I_{EBO}	-	-	1	mA	V_{EB}=9V
*On Characteristics(1)						
Collector-Emitter Saturation Voltage	VCE(sat)1	-	-	0.5	V	I_C=500mA, I_B=100mA
	VCE(sat)2	-	-	1.0		I_C=1A, I_B=250mA
	VCE(sat)3	-	-	3.0		I_C=1.5A, I_B=500mA
	VCE(sat)4	-	-	1.0		I_C=1A, I_B=250mA, T_C=100℃
Base-Emitter Saturation Voltage	VBE(sat)1	-	-	1.0	V	I_C=500mA, I_B=100mA
	VBE(sat)2	-	-	1.2		I_C=1A, I_B=250mA
	VBE(sat)3	-	-	1.1		I_C=1A, I_B=250mA, T_C=100℃
DC Current Gain	H_{FE1}	8	-	40		V_{CE}=2V, I_C=500mA
	H_{FE2}	5	-	25		V_{CE}=2V, I_C=1A
Current-Gain Bandwidth Product	f_T	4	10	-	MHz	V_{CE}=10V, I_C=100mA, f=1MHz
Output Capacitance	Cob	-	21	-	pF	V_{CB}=10V, I_E=0, f=0.1MHz
*Switching Characteristics						
Delay Time	Td	-	0.05	0.1	μs	V_{CC}=125V, I_C=1A, I_{B1}=I_{B2}=0.2A, Tp=25μs, Duty Cycle≦1%
Rise Time	Tr	-	0.5	1		
Storage Time	Ts	-	2	4		
Fall Time	Tf	-	0.4	0.7		
Storage Time	Tsv	-	1.7	4	μs	I_C=1A, V_{clamp}=300V, I_{B1}=0.2A, $V_{BE(off)}$=5Vdc, T_C=100℃
Crossover Time	Tc	-	0.29	0.75		
Fall Time	Tfi	-	0.15	-		

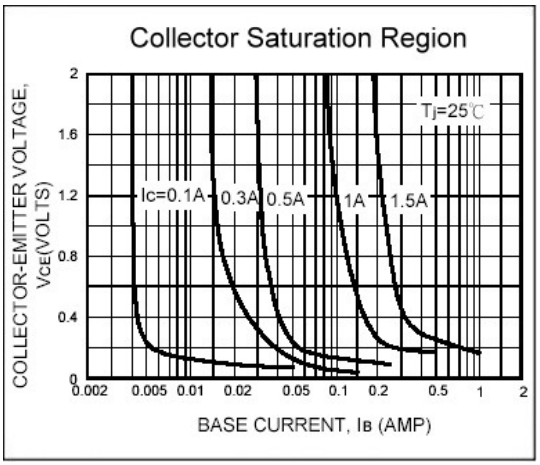
(1)Pulse Test: Pulse Width=300μs, Duty Cycle≦2%

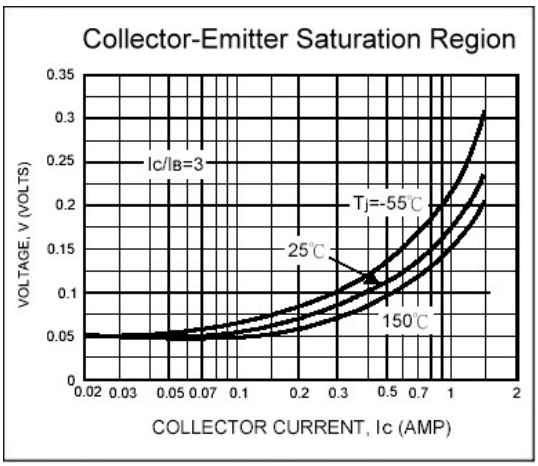
Classification Of H_{FE1}

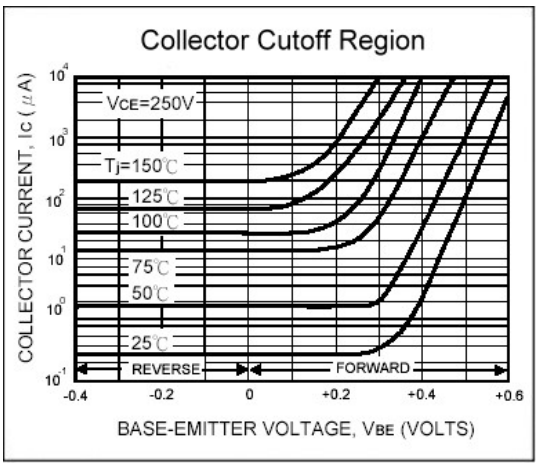
Rank	A	B	C	D	E	F
Range	8~16	15~21	20~26	25~31	30~36	35~40

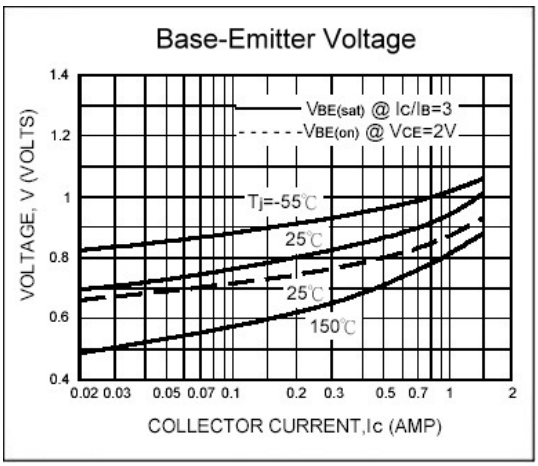
Characteristics Curve

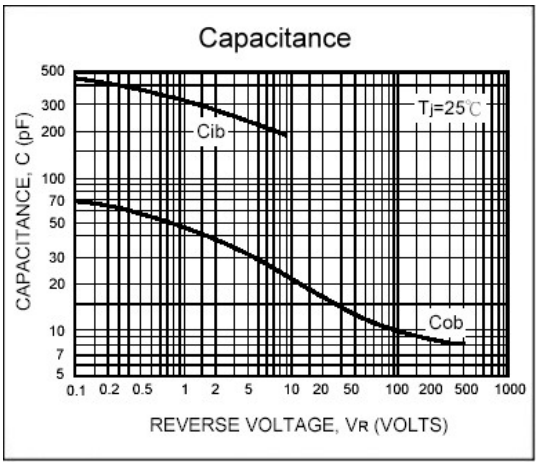


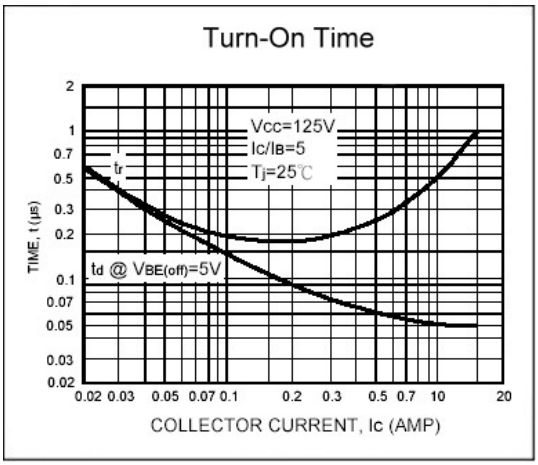


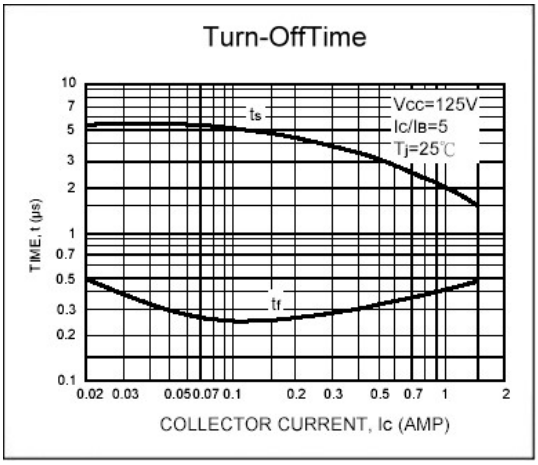


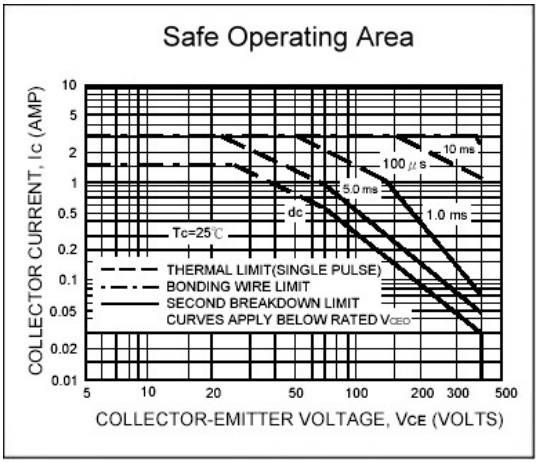


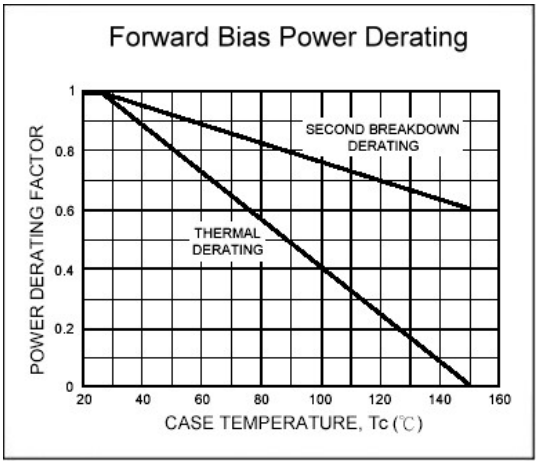


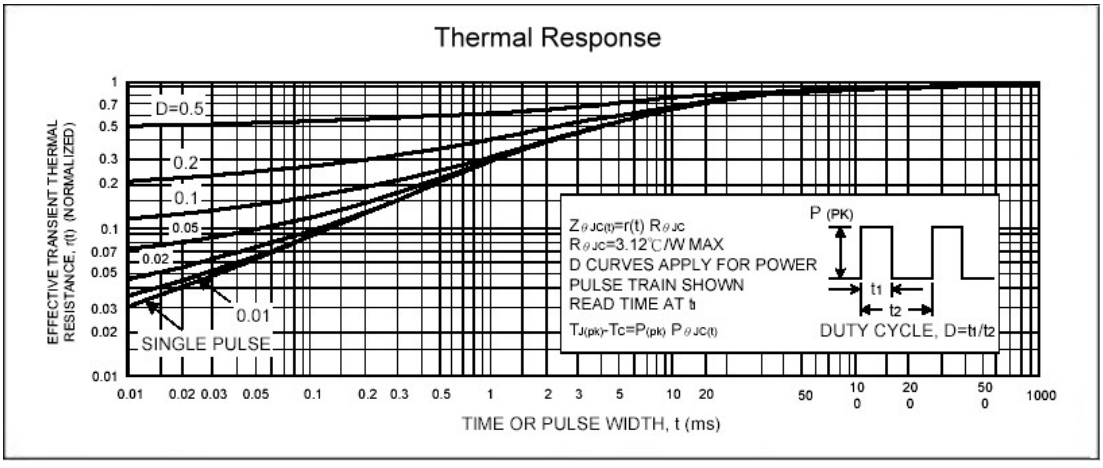












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