

## GE13003

### NPN SILICON POWER TRANSISTOR

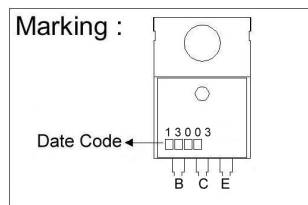
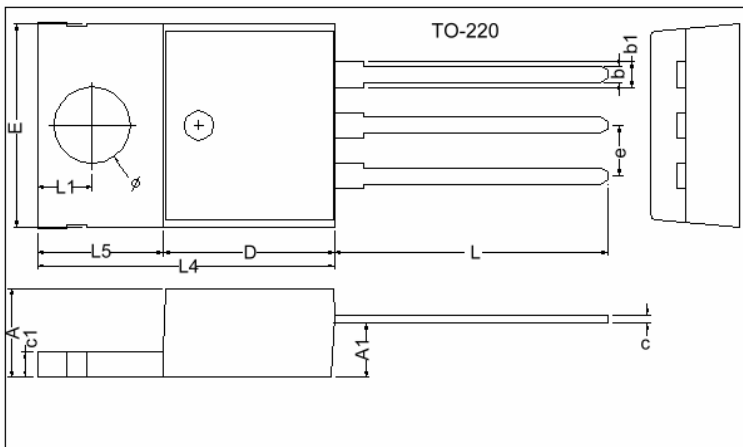
#### Description

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°C...tc @ 1A, 100°C 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	∅	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Ratings	Unit
Junction Temperature	Tj	+150	°C
Storage Temperature	Tstg	-55 ~ +150	°C
Collector to Emitter Voltage	VCEO(sus)	400	V
Collector to Emitter Voltage	VCEO	700	V
Emitter to Base Voltage	VEBO	9	V
Collector Current -Continuous	IC	1.5	A
-Peak(1)	ICM	3.0	A
Base Current -Continuous	IB	0.75	A
-Peak(1)	IBM	1.5	A
Emitter Current -Continuous	IE	2.25	A
-Peak(1)	IEM	4.5	A
Total Power Dissipation at Ta=25°C	PD	1.4	W
Derate above 25°C		11.2	mW/°C
Total Power Dissipation at Tc=25°C	PD	40	W
Derate above 25°C		320	mW/°C

#### Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-ambient	RθJA	89	°C/W
Thermal Resistance, Junction-case	RθJC	3.12	°C/W
Maximum Lead Temperature for Soldering Purposes:1/8" from Case for 5 Seconds	TL	275	°C

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

**Electrical Characteristics(Tc = 25°C Unless otherwise specified)**

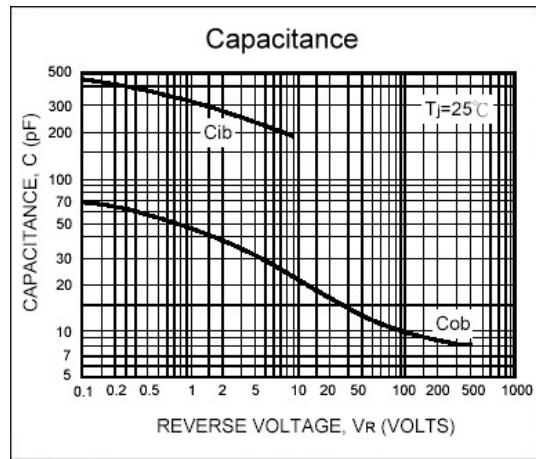
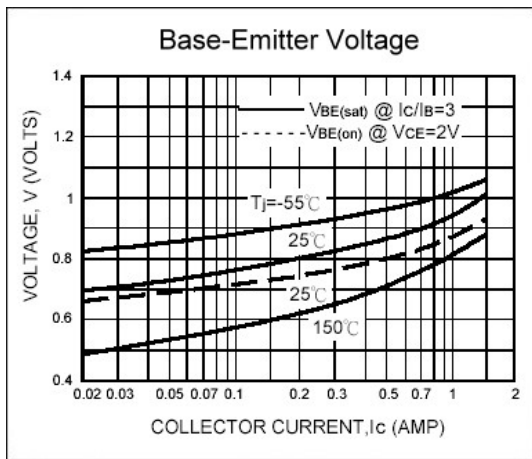
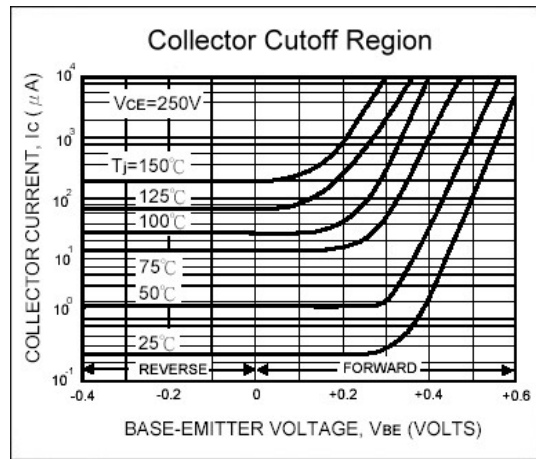
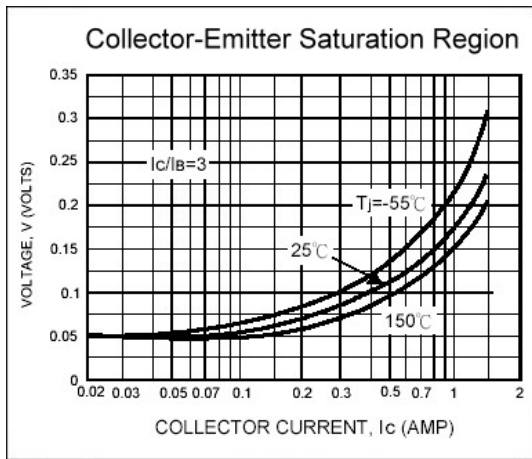
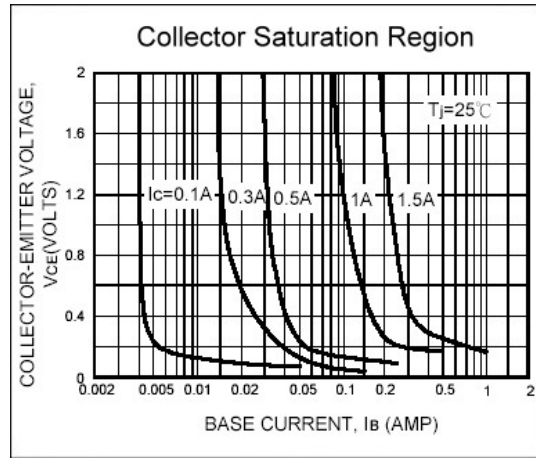
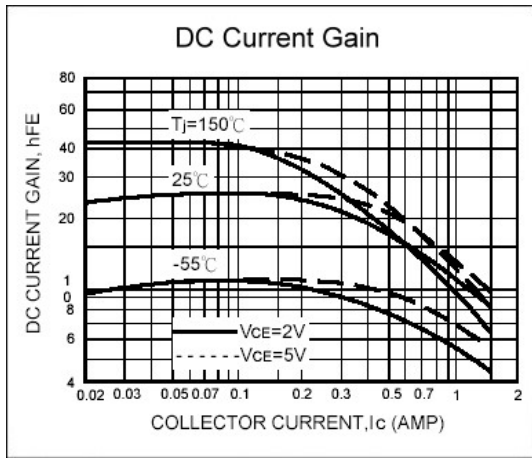
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*Off Characteristics(1)						
Collector-Emitter Sustaining Voltage	VCE(sus)	400	-	-	V	IC=10mA, IB=0
Collector Cutoff Current	ICEV	-	-	1 5	mA	VCEV=Rated Value, VBE(off)=1.5V VCEV=Rated Value, VBE(off)=1.5V, TC=100°C
Emitter Cutoff Current	IEBO	-	-	1	mA	VEB=9V
*On Characteristics(1)						
Collector-Emitter Saturation Voltage	VCE(sat)1	-	-	0.5	V	IC=500mA, IB=100mA
	VCE(sat)2	-	-	1.0		IC=1A, IB=250mA
	VCE(sat)3	-	-	3.0		IC=1.5A, IB=500mA
	VCE(sat)4	-	-	1.0		IC=1A, IB=250mA, TC=100°C
Base-Emitter Saturation Voltage	VBE(sat)1	-	-	1.0	V	IC=500mA, IB=100mA
	VBE(sat)2	-	-	1.2		IC=1A, IB=250mA
	VBE(sat)3	-	-	1.1		IC=1A, IB=250mA, TC=100°C
DC Current Gain	HFE1	8	-	40		VCE=2V, IC=500mA
	HFE2	5	-	25		VCE=2V, IC=1A
Current-Gain Bandwidth Product	fT	4	10	-	MHz	VCE=10V, IC=100mA, f=1MHz
Output Capacitance	Cob	-	21	-	pF	VCB=10V, IE=0, f=0.1MHz
*Switching Characteristics						
Delay Time	Td	-	0.05	0.1	μs	VCC=125V, IC=1A, IB1=IB2=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	IC=1A, Vclamp=300V, IB1=0.2A, VBE(off)=5Vdc, TC=100°C
Crossover Time	Tc	-	0.29	0.75		
Fall Time	Tfi	-	0.15	-		

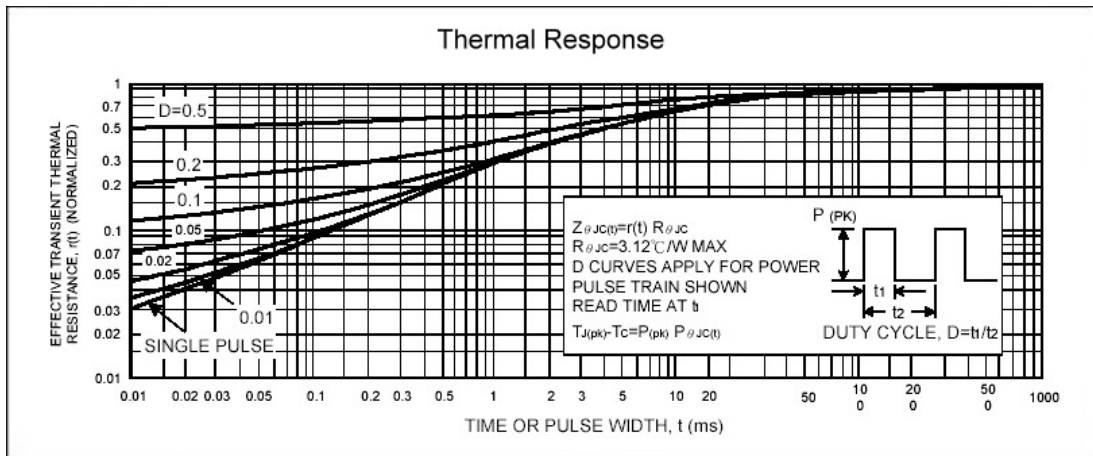
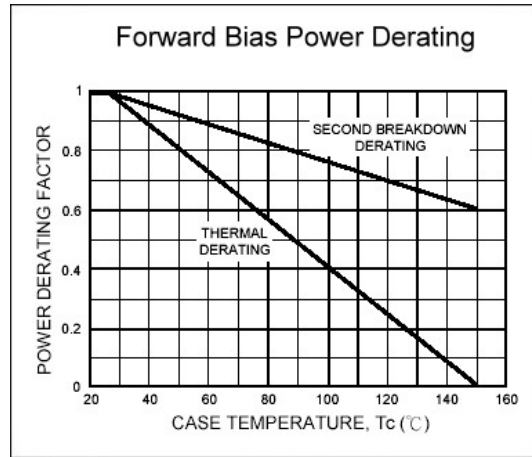
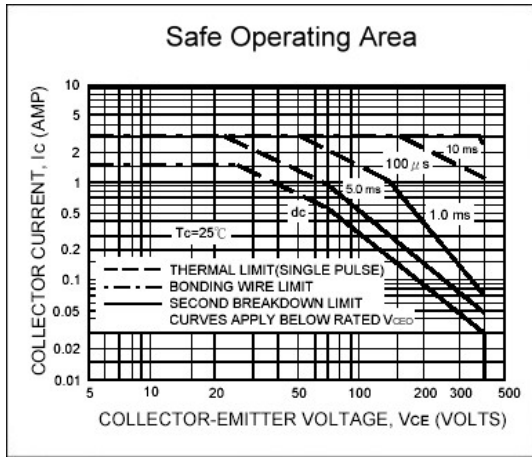
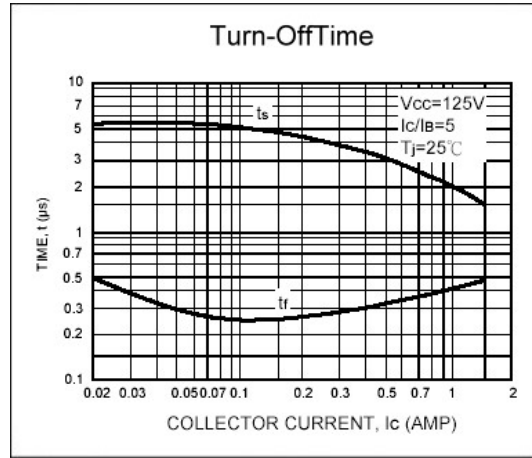
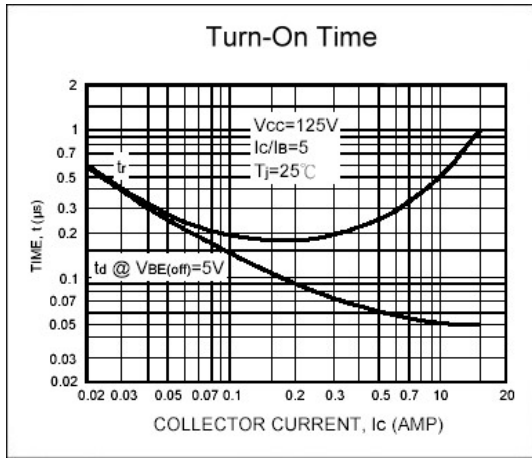
(1)Pulse Test: Pulse Width=300μs, Duty Cycle ≤ 2%

**Classification Of HFE1**

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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