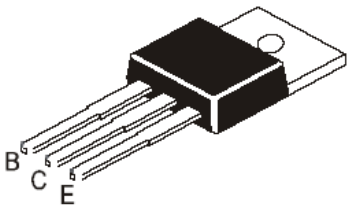
NPN Power Transistor



TO-220

Features

- The TCI MJE13009 is designed for high–voltage, high–speed power switching inductive circuits where fall time is critical. It is particularly suited for 115 and 220 V switch mode applications
- RoHS Compliant

Mechanical Data

Case:	TO-220, Plastic Package
Terminals:	Solderable per MIL-STD-202, Method 208
Weight:	0.08 ounces, 2.24 grams

Absolute Maximum Ratings (Tamb=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	400	V
V_{CEV}	Collector- Emitter Voltage	700	V
V_{EBO}	Emitter-Base Voltage	9.0	V
I_C	Collector Current Continuous	12.0	A
I_{CM}	Collector Current Peak	24.0	A
I_B	Base Current	6.0	A
P_D	Power Dissipation Tc=25°C	100	W
	Power Dissipation Derate above Tc=25°C	0.8	W/°C
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.25	°C /W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient in free air	62.5	°C /W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65～ 150	°C

Electrical Characteristics (Tamb=25°C unless otherwise noted)

Symbol	Parameter	Min.	Max.	Unit	Test Condition
VCEO(sus)	Collector- Emitter Sustaining Voltage	400	-	V	IC=10mA, IB=0
ICBO	Collector Cut-off Current	-	1.0	mA	VCB=700V, VBE(off)=1.5V
		-	5.0		VCB=700V, VBE(off)=1.5V,Tc=100°C
IEBO	Emitter Cut-off Current	-	1.0	mA	VEB=9.0V,IC=0
hFE *	DC Current Gain	8.0	40		VCE=5.0V, IC =5.0A
		6.0	30		VCE=5.0V, IC =8.0A
VCE(sat) *	Collector-Emitter Saturation Voltage	-	1.0	V	IC =5.0A, IB =1.0A
		-	1.5		IC =8.0A, IB =1.6A
		-	3.0		IC =12.0A, IB =3.0A
VBE(sat) *	Base-Emitter Saturation Voltage	-	1.2	V	IC =5.0A, IB =1.0A
		-	1.6		IC =8.0A, IB =1.6A
fT	Current Gain Bandwidth Product	4.0	-	MHz	IC=500mA, VCE=10V, f=1.0MHz
Cob	Output Capacitance	180 (typ.)		pF	VCB=10V, IE=0, f=0.1MHz
td	Delay Time	-	0.1	us	VCC=125V, IC=8.0A IB1=-IB2=1.6A, tp=25μs, Duty Cycle≤1.0%
tr	Rise Time	-	1.0		
ts	Storage Time	-	3.0		
tf	Fall Time	-	0.7		

* Pulse Test: Pulse Width≤300us, Duty Cycle≤2.0%

Typical Characteristics Curves

Fig.1-DC Current Gain

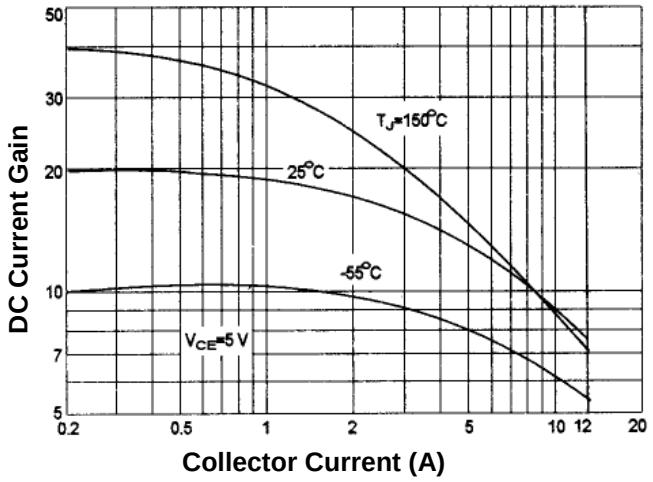


Fig.2-Collector Saturation Region

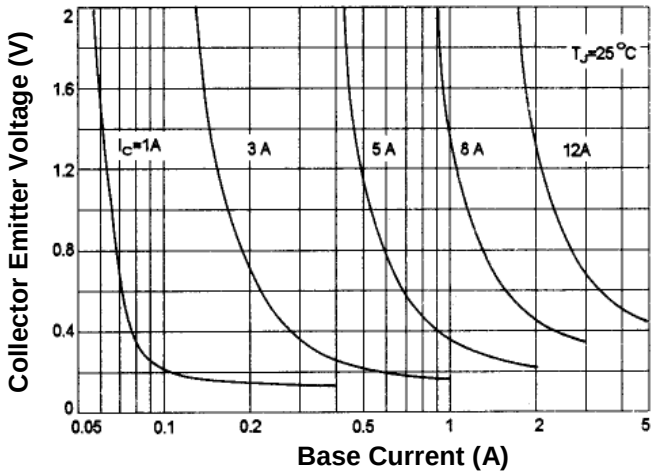


Fig.3-Base-Emitter Saturation Voltage

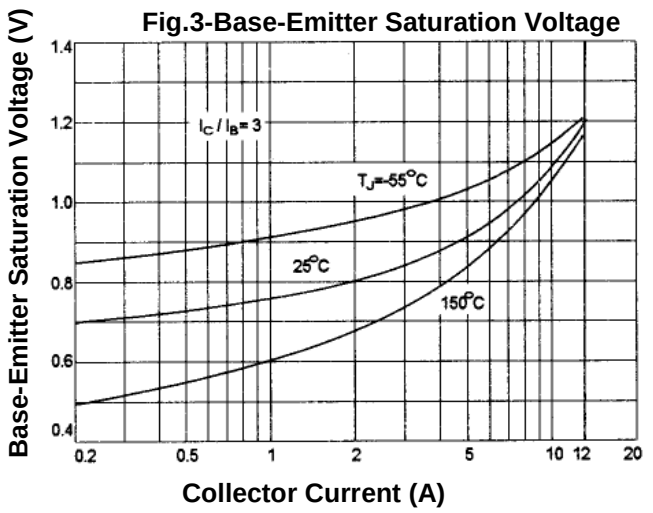


Fig.4-Collector-Emitter Saturation Voltage

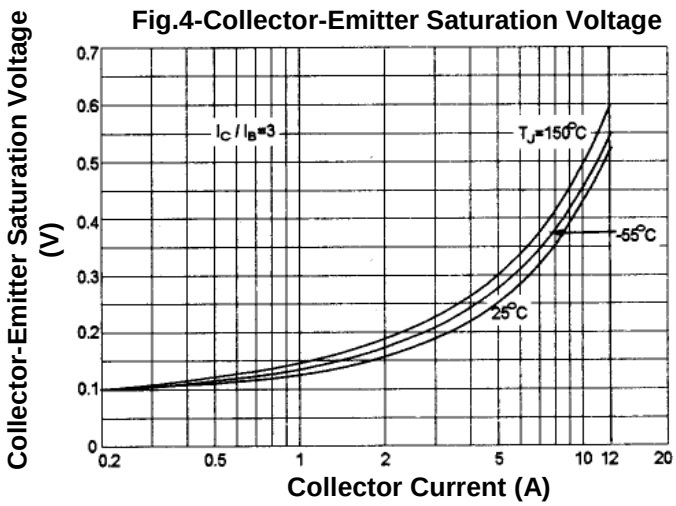


Fig.5-Collector Cut-Off Region

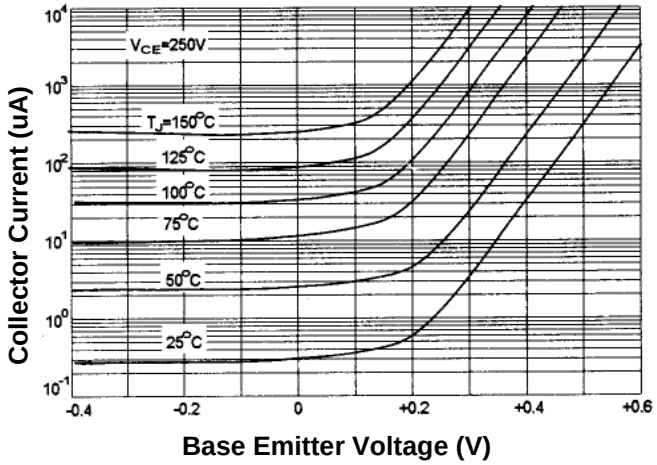


Fig.6-Capacitance

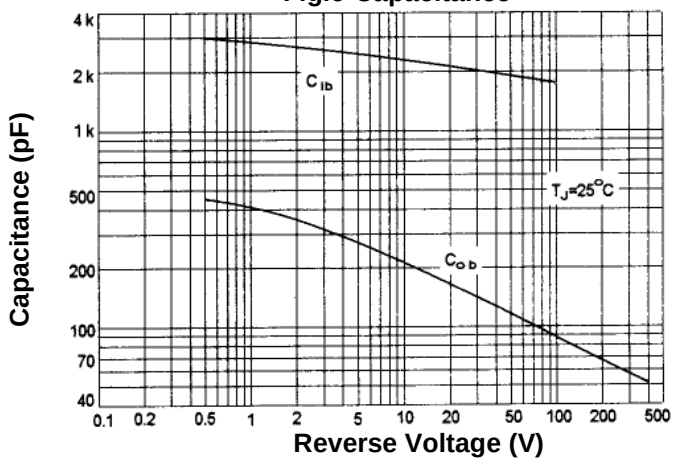


Fig.7-Turn-On Time

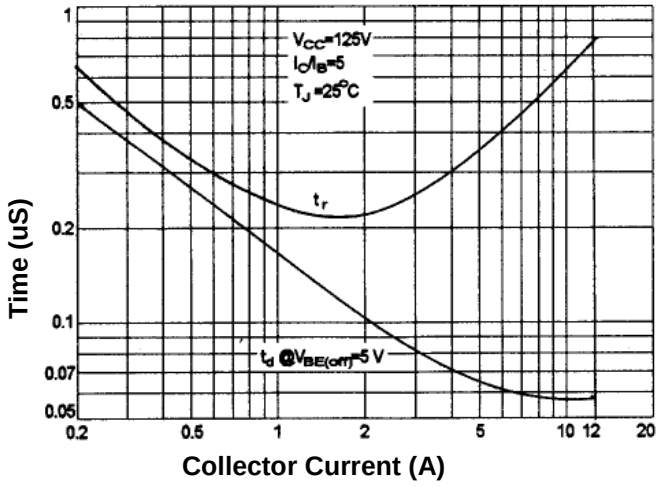


Fig.8- Turn-Off Time

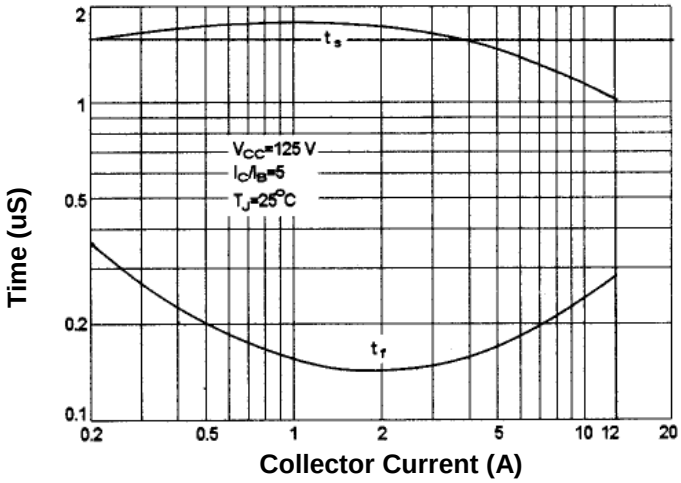


Fig.9-Active Region Safe Operation Area

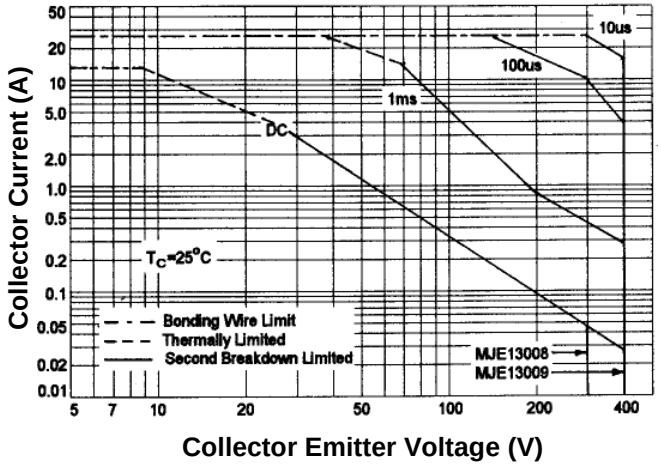


Fig.10- Reverse Bias Switching Safe Operation Area

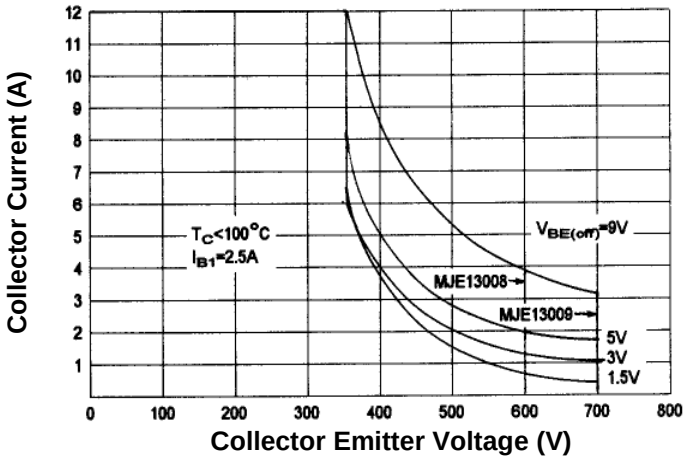
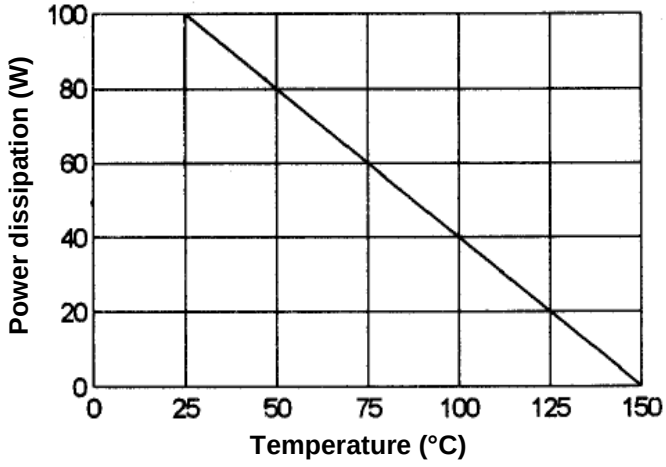
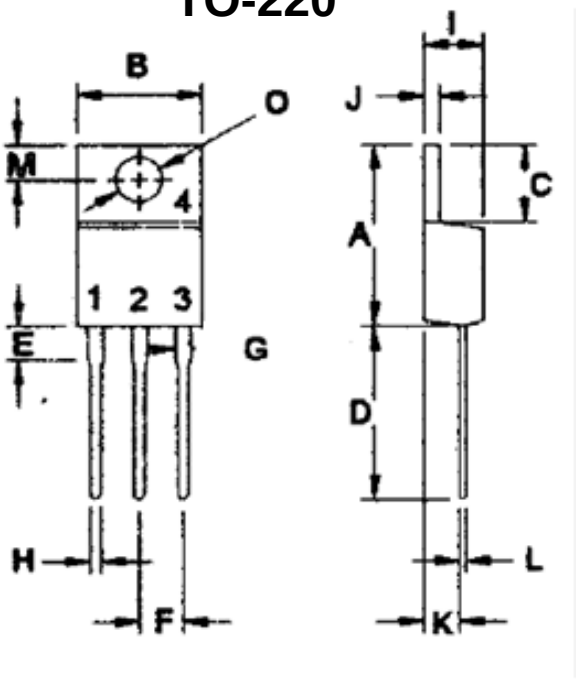


Fig.11-Power Derating



Dimensions in inches (mm)

TO-220



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

Dimension	Millimeters		Dimension	Millimeters	
	Min	Max		Min	Max
A	14.68	15.31	H	0.72	0.96
B	9.78	10.42	I	4.22	4.98
C	5.01	6.52	J	1.14	1.38
D	13.06	14.62	K	2.20	2.97
E	3.57	4.07	L	0.33	0.55
F	2.42	3.66	M	2.48	2.98
G	1.12	1.36	O	3.70	3.90

How to contact us:

US HEADQUARTERS
28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355
Tel: (800) TAITRON (800) 247-2232 (661) 257-6060
Fax: (800) TAITFAX (800) 824-8329 (661) 257-6415
Email: taitron@taitroncomponents.com
Http://www.taitroncomponents.com

TAITRON COMPONETS MEXICO, S.A .DE C.V.
BOULEVARD CENTRAL 5000 INTERIOR 5 PARQUE INDUSTRIAL ATITALAQUIA, HIDALGO
C.P. 42970 MEXICO
Tel: +52-55-5560-1519
Fax: +52-55-5560-2190

TAITRON COMPONETS INCORPORATED E REPRESENTAÇÕES DO BRASIL LTDA
RUA DOMINGOS DE MORAIS, 2777, 2.ANDAR, SALA 24 SAÚDE - SÃO PAULO-SP 04035-001
BRAZIL
Tel: +55-11-5574-7949
Fax: +55-11-5572-0052

TAITRON COMPONETS INCORPORATED, SHANGHAI REPRESENTATIVE OFFICE
METROBANK PLAZA, 1160 WEST YAN' AN ROAD, SUITE 1503, SHANGHAI, 200052, CHINA
Tel: +86-21-54249942
Fax: +86-21-5424-9931