13005

DATASHEET

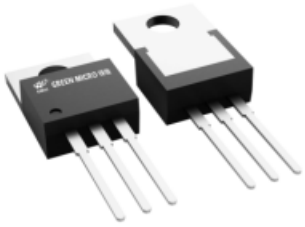
Specification Revision History:

Version	Date	Description
V1.0	2019/11	New
V1.1	2021/10	Modify Ordering Information
V1.2	2025/02	Modify Ordering Information
V1.3	2025/03	Add application precautions and overall typesetting.

High Voltage Switch Mode Application

· High Speed Switching
· Suitable for Switching Regulator and Motor Control

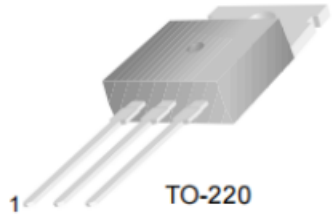
The appearance of the product



TO-220-3

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
MJE13005TC314	TO-220-3	MJE13005 314	TUBE	1000PCS/BOX



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1.Base 2.Collector 3.Emitter

NPN Silicon Transistor

Absolute Maximum Ratings Tc=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	780	V
V_{CEO}	Collector-Emitter Voltage	480	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current(DC)	4	A
I_{CP}	Collector Current (Pulse)	8	A
I_B	Base Current	2	A
P_C	Collector Dissipation(T_C=25°C)	75	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55～150	°C

Electrical Characteristics Tc=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	I_C = 1mA, I_B = 0	410			V
I_{EBO}	Emitter Cut-off Current	V_{CB} = 9V, I_C =0			1	mA
h_{FE}	*DC Current Gain	V_{CC} = 5V, I_C = 500mA V_{CC} = 5V, I_C = 2A	15 8		30 40	
$V_{CE(sat)}$	*Collector-Emitter Saturation Voltage	I_C = 1A, I_B = 0.2A I_C = 2A, I_B = 0.5A I_C = 4A, I_B = 1A			0.5 0.5	V V V
$V_{BE(sat)}$	*Base-Emitter Saturation Voltage	I_C = 1A, I_B = 0.2A I_C = 2A, I_B = 0.5A			1.2 1.6	V V
C_{ob}	Output Capacitance	V_{CB} =10V,f=0.1MHz		65		pF
f_T	Current Gain Bandwidth Product	V_{CC} = 10V, I_C =0.5A	5			MHz
t_{ON}	Turn ON Time	V_{CC} = 125V, I_C = 2A I_{B1} = - I_{B2} = 0.4A R_L = 62.5Ω			0.8	μs
t_{STG}	Storage Time				3.5	μs
t_F	Fall Time				0.9	μs

Typical Characteristics

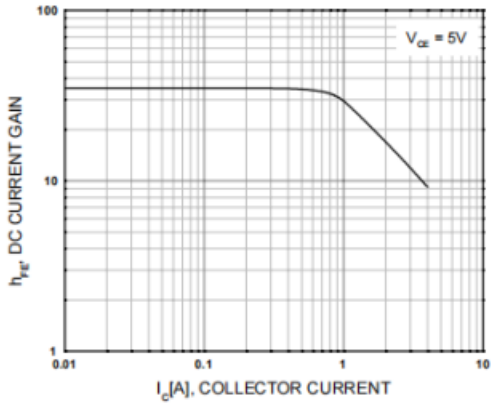

Figure 1. DC current Gain

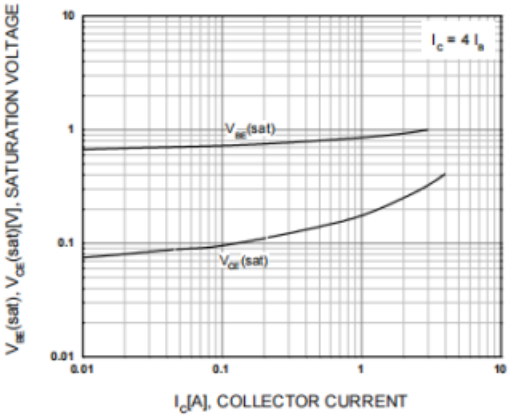

Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

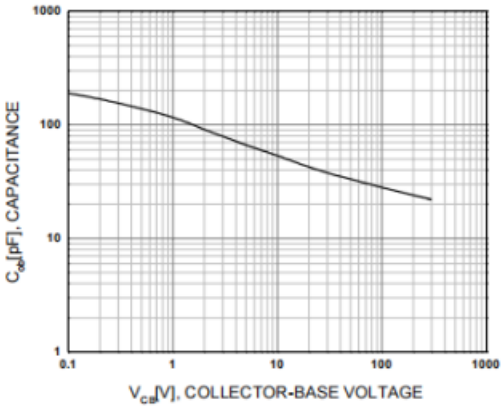

Figure 3. Collector Output Capacitance

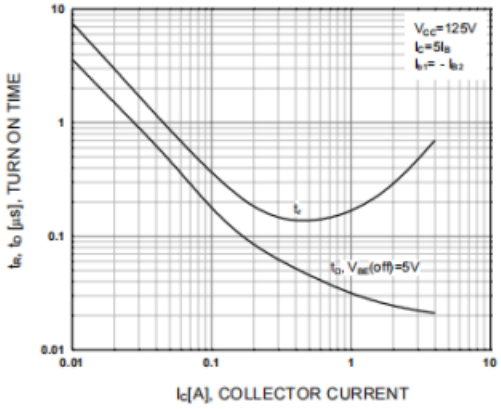

Figure 4. Turn On Time

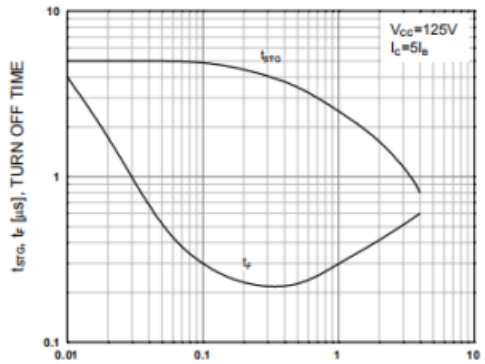

Figure 5. Turn Off Time

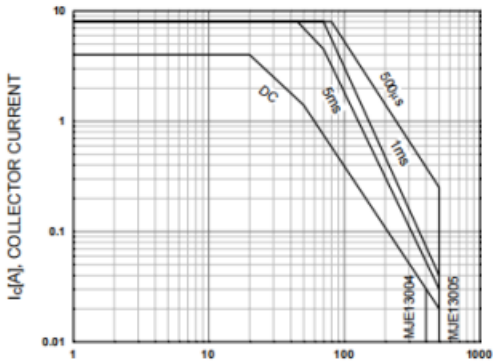

Figure 6. Safe Operating Area

Typical Characteristics (Continued)

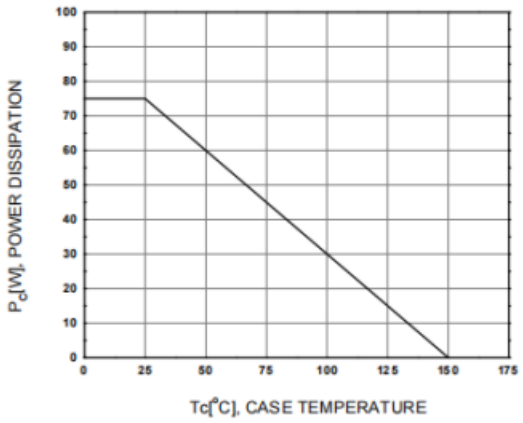

Figure 7. Power Derating

Package Demensions

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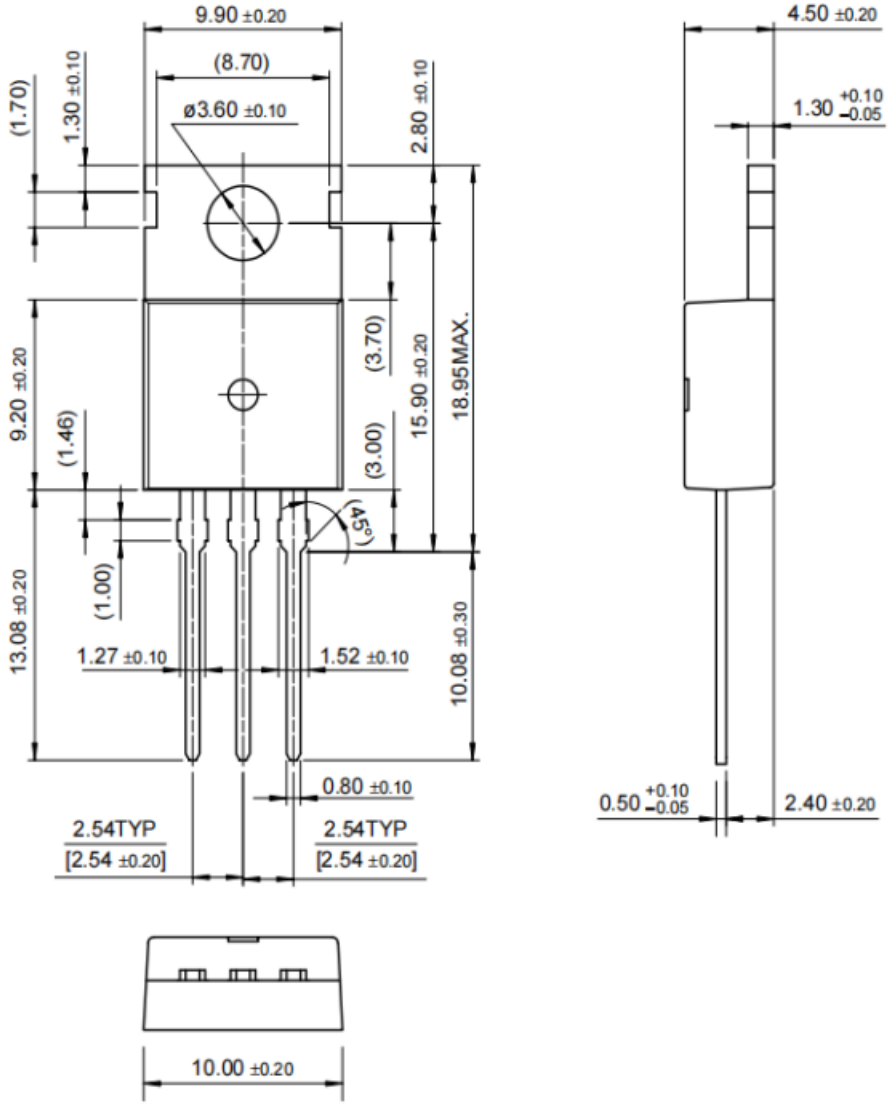

Dimensions in Millimeters

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