

isc Silicon NPN Darlington Power Transistor

MJ10002

DESCRIPTION

- Low Collector-Emitter Sustaining Voltage
- High Switching Speed
- 100% avalanche tested
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

APPLICATIONS

Designed for high voltage, high speed , power switching in Inductive circuits where fall time is critical. They are particularly suited for line operated switch-mode applications as:

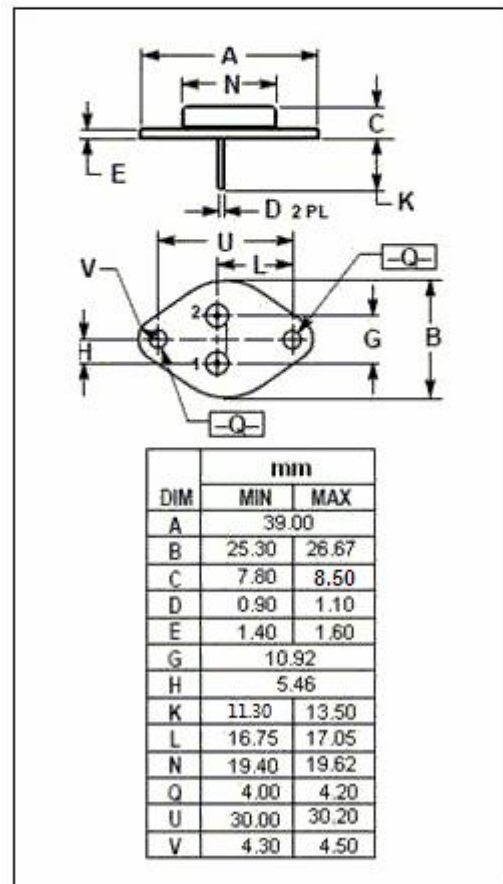
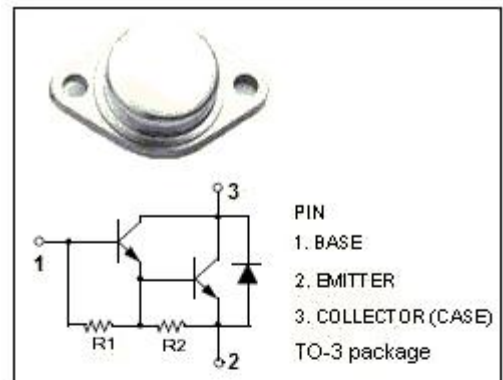
- Switching Regulators
- Inverters
- Solenoid and Relay Drivers
- Motor Controls
- Deflection Circuits

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

SYMBOL	PARAMETER	VALUE	UNIT
V _{CEO(SUS)}	Collector-Emitter Voltage	350	V
V _{CBO}	Collector- Base Voltage	450	V
V _{EBO}	Emitter-Base Voltage	8	V
I _C	Collector Current-Continuous	10	A
I _{CM}	Collector Current-Peak	20	A
I _B	Base Current-Continuous	2.5	A
I _{BM}	Base Current-Peak	5.0	A
P _C	Collector Power Dissipation @T _C =25°C	150	W
T _J	Junction Temperature	200	°C
T _{stg}	Storage Temperature Range	-65~200	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R _{th j-c}	Thermal Resistance, Junction to Case	1.17	°C/W



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ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=30\text{mA}; I_B=0$	350			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=5\text{A}; I_B=0.25\text{A}$			1.9	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1\text{A}$			2.9	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=5\text{A}; I_B=0.25\text{A}$			2.5	V
I_{CBO}	Collector Cutoff Current	$V_{CB}=450\text{V}; I_E=0; T_C=150^{\circ}\text{C}$			0.25	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}=8\text{V}; I_C=0$			175	mA
h_{FE-1}	DC Current Gain	$I_C=2.5\text{A}, V_{CE}=5\text{V}$	40			
h_{FE-2}	DC Current Gain	$I_C=5\text{A}, V_{CE}=5\text{V}$	30			
V_{ECF}	C-E Diode Forward Voltage	$I_F=5\text{A}$			6.0	V
C_{OB}	Output Capacitance	$I_E=0, V_{CB}=50\text{V}; f_{\text{test}}=0.1\text{MHz}$	60			pF

Switching Times; Resistive Load

t_d	Delay Time	$V_{CC}=250\text{V}; I_C=5\text{A}; I_{B1}=0.25\text{A}$ $V_{BE(off)}=5\text{V}$ $t_p=50\mu\text{s}, \text{Duty Cycle}\leq 2\%$		0.05	0.2	μs
t_r	Rise Time			0.25	0.6	μs
t_s	Storage Time			1.2	3.0	μs
t_f	Fall Time			0.6	1.5	μs

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