

isc Silicon NPN Darlington Power Transistor

MJ11020

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 200V$ (Min.)
- High DC Current Gain-
: $h_{FE} = 400$ (Min.)@ $I_C = 10A$
- Low Collector Saturation Voltage-
: $V_{CE(sat)} = 1.0V$ (Max.)@ $I_C = 5.0A$

APPLICATIONS

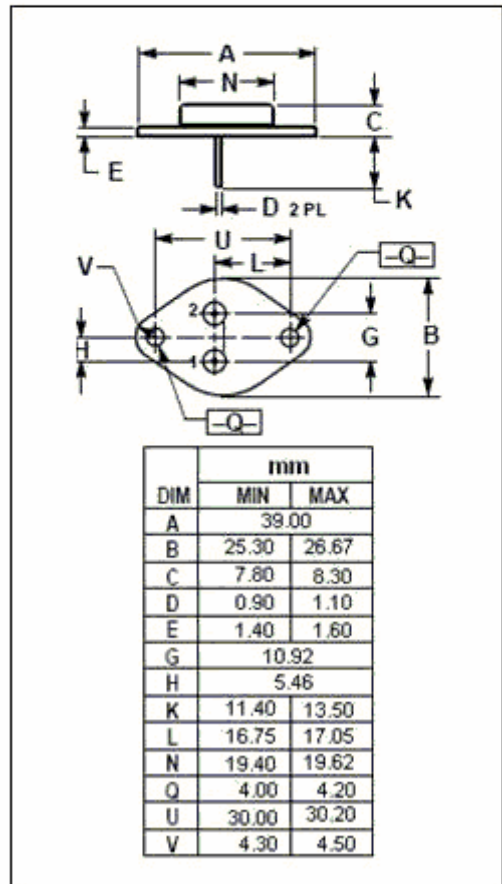
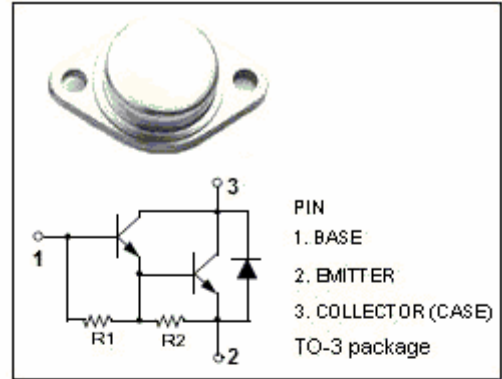
- Designed for general purpose amplifiers, low frequency switching and motor control applications.

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	200	V
V_{CEO}	Collector-Emitter Voltage	200	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current-Continuous	15	A
I_{CM}	Collector Current-Peak	30	A
I_B	Base Current-Continuous	0.5	A
P_C	Collector Power Dissipation @ $T_C=25^{\circ}C$	175	W
T_j	Junction Temperature	175	$^{\circ}C$
T_{stg}	Storage Temperature Range	-65~200	$^{\circ}C$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance, Junction to Case	0.86	$^{\circ}C/W$



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CE(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=0.1\text{A}; I_B=0$	200			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=0.1\text{A}$			2.0	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=15\text{A}; I_B=0.15\text{A}$			3.4	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=15\text{A}; I_B=0.15\text{A}$			3.8	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C=10\text{A}, V_{CE}=5\text{V}$			2.8	V
I_{CEV}	Collector Cutoff Current	$V_{CE}=200\text{V}; V_{BE(off)}=1.5\text{V}$ $V_{CE}=200\text{V}; V_{BE(off)}=1.5\text{V}; T_C=150^{\circ}\text{C}$			0.5 5.0	mA
I_{CEO}	Collector Cutoff Current	$V_{CE}=100\text{V}; I_B=0$			1.0	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			2.0	mA
h_{FE-1}	DC Current Gain	$I_C=10\text{A}, V_{CE}=5\text{V}$	400		15000	
h_{FE-2}	DC Current Gain	$I_C=15\text{A}, V_{CE}=5\text{V}$	100			
C_{OB}	Output Capacitance	$I_E=0, V_{CB}=10\text{V}; f_{test}=0.1\text{MHz}$			400	pF

Switching Times

t_d	Delay Time	$V_{CC}=100\text{V}; I_C=10\text{A}; I_{B1}=0.1\text{A}$ $V_{BE(off)}=5\text{V}$		0.15		μs
t_r	Rise Time			1.2		μs
t_s	Storage Time			4.4		μs
t_f	Fall Time			10		μs