

Silicon NPN Darlington Power Transistor

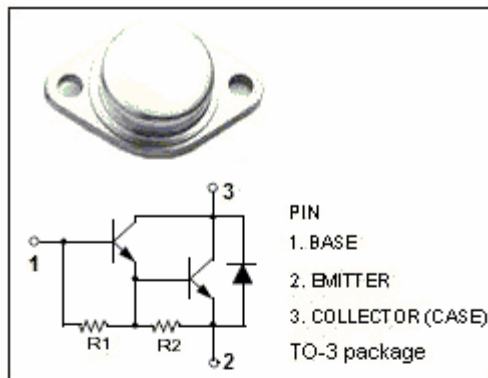
MJ11020

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.)@  $I_C = 5.0A$

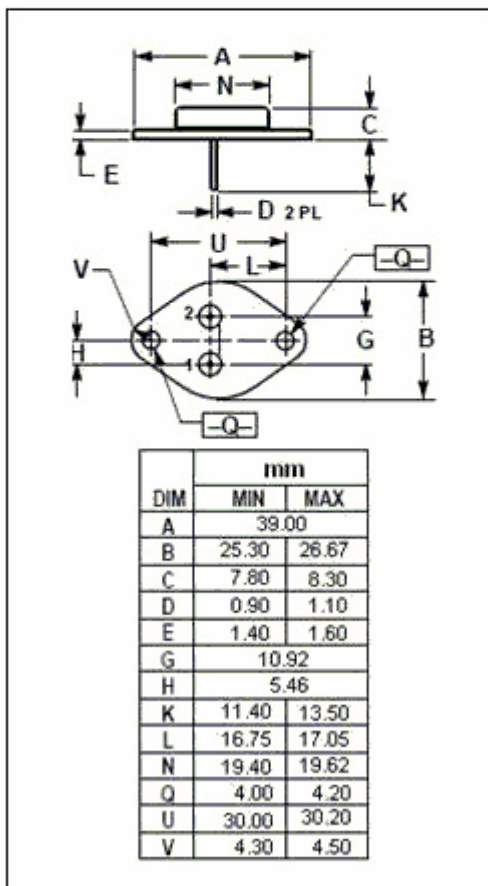
APPLICATIONS

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



ABSOLUTE MAXIMUM RATINGS ( $T_a=25$  )

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 @ $T_C=25$	175	W
$T_j$	Junction Temperature	175	
$T_{stg}$	Storage Temperature Range	-65~200	



THERMAL CHARACTERISTICS

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

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## ELECTRICAL CHARACTERISTICS

 $T_C=25$  unless otherwise specified

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

## Switching Times

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