

**INCHANGE Semiconductor**

**isc Product Specification**

**isc Silicon NPN Power Transistor**

**MJ12020**

**DESCRIPTION**

- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 450V(\text{Min})$
- Fast Turn-Off Time

**APPLICATIONS**

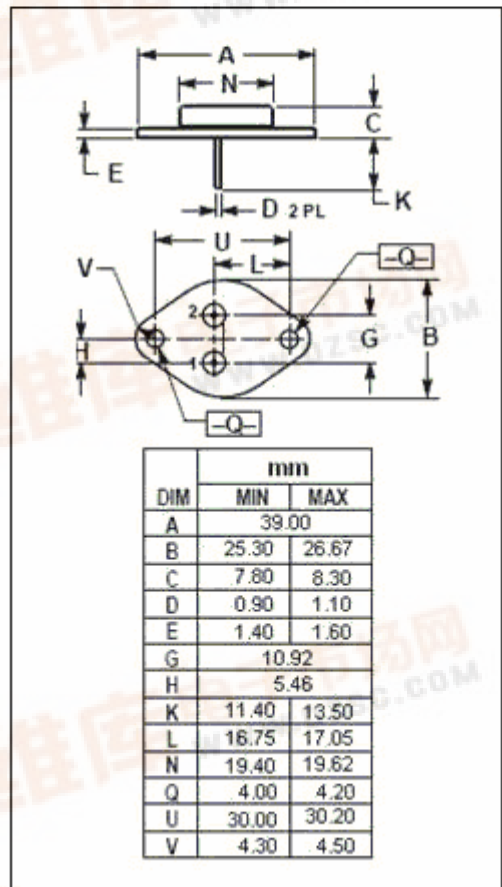
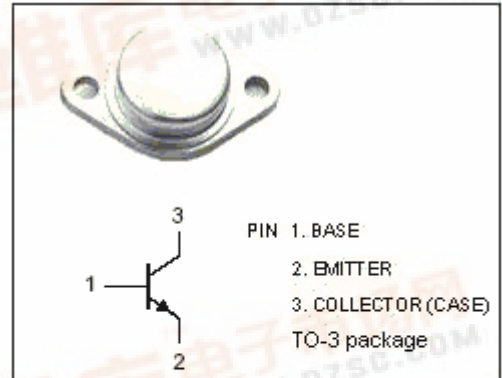
- Designed for high resolution video systems, such as : high density graphic displays, data terminals, video scanners.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CEV}$	Collector-Emitter Voltage	850	V
$V_{CEO(SUS)}$	Collector-Emitter Voltage	450	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	5	A
$I_{CM}$	Collector Current-Peak	10	A
$I_B$	Base Current-Continuous	4	A
$I_{BM}$	Base Current-Peak	8	A
$P_C$	Collector Power Dissipation@ $T_C=25^\circ\text{C}$	125	W
$T_J$	Junction Temperature	200	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-65~200	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance,Junction to Case	1.4	$^\circ\text{C/W}$



**isc Silicon NPN Power Transistor****MJ12020****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	$I_C=100\text{mA}$ ; $I_B=0$	450			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C= 3\text{A}$ ; $I_B= 0.6\text{A}$			1.2	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C= 3\text{A}$ ; $I_B= 0.6\text{A}$			1.5	V
$I_{CEV}$	Collector Cutoff Current	$V_{CEV}=850\text{V}$ ; $V_{BE(off)}=1.5\text{V}$ $V_{CEV}=850\text{V}$ ; $V_{BE(off)}=1.5\text{V}$ ; $T_C=100^{\circ}\text{C}$			0.25 1.5	mA
$I_{CER}$	Collector Cutoff Current	$V_{CE}= 850\text{V}$ ; $R_{BE}= 50\ \Omega$ , $T_C= 100^{\circ}\text{C}$			2.5	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}= 6\text{V}$ ; $I_C=0$			1.0	mA
$h_{FE}$	DC Current Gain	$I_C= 5\text{A}$ ; $V_{CE}= 5\text{V}$	5			
$f_T$	Current-Gain—Bandwidth Product	$I_C= 0.3\text{A}$ ; $V_{CE}= 10\text{V}$ ; $f_{test}=1\text{MHz}$	15			MHz
$C_{OB}$	Output Capacitance	$I_E= 0$ ; $V_{CB}= 10\text{V}$ ; $f_{test}=1\text{kHz}$			200	pF

Switching times; Inductive Load

$t_s$	Storage Time	$I_C= 3\text{A}$ , $V_{CC}= 40\text{V}$ ; $I_{B1}= 0.6\text{A}$ ; $PW= 8\ \mu\text{s}$ ; $V_{BE(off)}= 4\text{V}$ Duty Cycle $\leq 2.0\%$		440	1200	ns
$t_f$	Fall Time			130	300	ns