

**Silicon NPN Power Transistor**

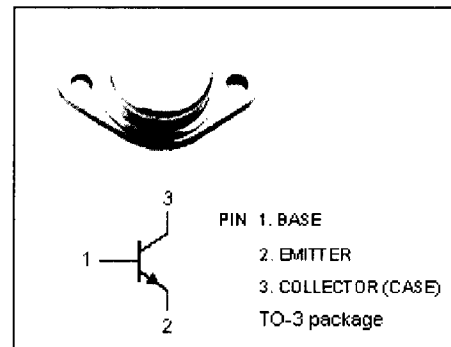
**MJ16014**

**DESCRIPTION**

- Collector-Emitter Sustaining Voltage-  
:  $V_{CE0(SUS)} = 450V(\text{Min})$
- High Switching Speed

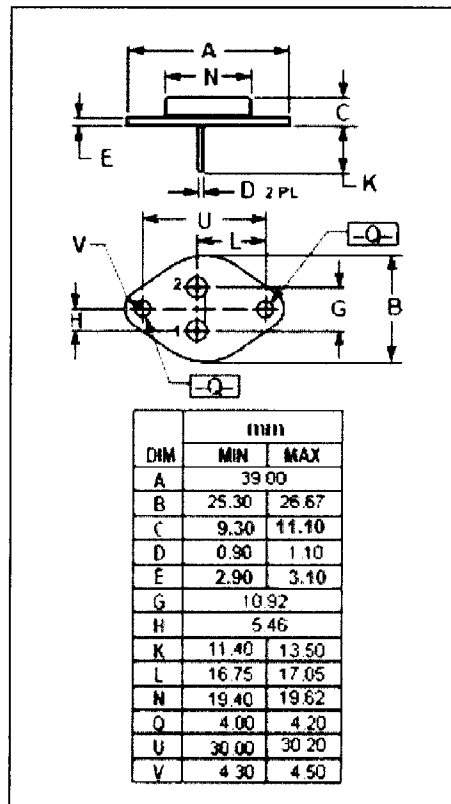
**APPLICATIONS**

- 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.
- Typical applications:
- Switching regulators
- Inverters
- Solenoid and relay drivers
- Motor controls
- Deflection circuits



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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CEV}$	Collector-Emitter Voltage	850	V
$V_{CE0(SUS)}$	Collector-Emitter Voltage	450	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	20	A
$I_{CM}$	Collector Current-Peak	30	A
$I_B$	Base Current-Continuous	10	A
$I_{BM}$	Base Current-Peak	20	A
$P_C$	Collector Power Dissipation@ $T_c=25^\circ\text{C}$	250	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	0.7	$^\circ\text{C/W}$



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# MJ16014

## 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
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}; I_B=1.3\text{A}$			2.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=15\text{A}; I_B=2\text{A}$ $I_C=15\text{A}; I_B=2\text{A}, T_C=100^\circ\text{C}$			3.0 3.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=15\text{A}; I_B=2\text{A}$ $I_C=15\text{A}; I_B=2\text{A}, T_C=100^\circ\text{C}$			1.5 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	$I_C=20\text{A}; V_{CE}=5\text{V}$	5			
$C_{OB}$	Output Capacitance	$I_E=0; V_{CB}=10\text{V}; f_{est}=1.0\text{kHz}$			500	pF

Switching times; Resistive Load

$t_d$	Delay Time	$I_C=15\text{A}, V_{CC}=250\text{V}, R_{B2}=1.6\Omega$ $I_{B1}=2\text{A}; I_{B2}=-4\text{A}, \text{PW}=30\mu\text{s}$ Duty Cycle $\leq 2.0\%$		20	50	ns
$t_r$	Rise Time			200	500	ns
$t_s$	Storage Time			1200	2700	ns
$t_f$	Fall Time			200	350	ns