

INCHANGE Semiconductor

isc Product Specification

isc Silicon NPN Power Transistor

MJ8504

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 700V(\text{Min})$
- 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:

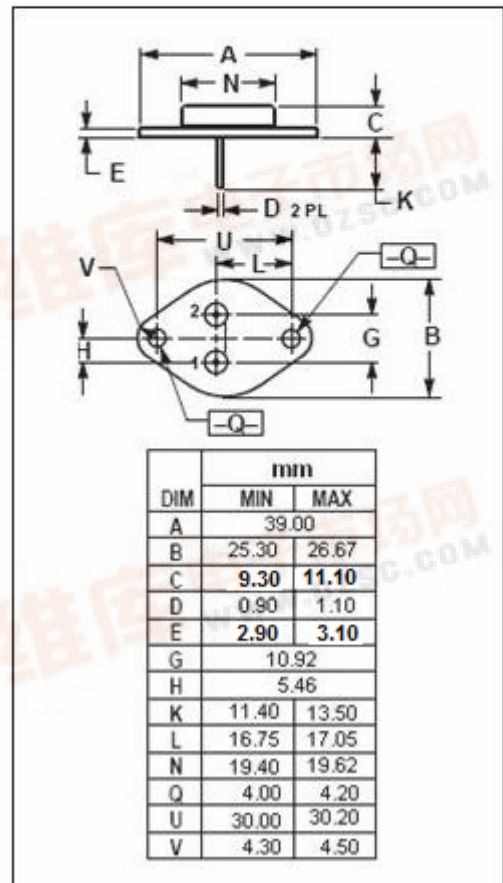
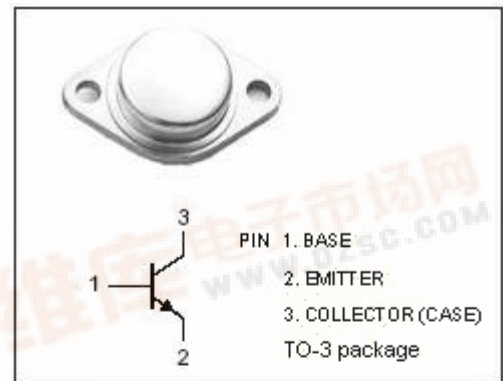
- Switching regulators
- Inverters
- Solenoid and relay drivers
- Motor controls
- Deflection circuits

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CEV}	Collector-Emitter Voltage	1200	V
$V_{CEO(SUS)}$	Collector-Emitter Voltage	700	V
V_{EBO}	Emitter-Base Voltage	8	V
I_C	Collector Current-Continuous	10	A
I_{CM}	Collector Current-Peak	15	A
I_B	Base Current-Continuous	8	A
I_{BM}	Base Current-Peak	12	A
P_C	Collector Power Dissipation@ $T_C=25^\circ\text{C}$	175	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	1.0	$^\circ\text{C/W}$



isc Silicon NPN Power Transistor**MJ8504****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	$I_C=100\text{mA}$; $I_B=0$	700			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C= 5\text{A}$; $I_B= 2\text{A}$ $I_C= 5\text{A}$; $I_B= 2\text{A}$, $T_C=100^{\circ}\text{C}$			2.0 3.0	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C= 10\text{A}$; $I_B= 4\text{A}$			5.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C= 5\text{A}$; $I_B= 2\text{A}$ $I_C= 5\text{A}$; $I_B= 2\text{A}$, $T_C=100^{\circ}\text{C}$			1.5 1.5	V
I_{CEV}	Collector Cutoff Current	$V_{CEV}=1200\text{V}$; $V_{BE(off)}=1.5\text{V}$ $V_{CEV}=1200\text{V}$; $V_{BE(off)}=1.5\text{V}$; $T_C=150^{\circ}\text{C}$			0.25 5.0	mA
I_{CER}	Collector Cutoff Current	$V_{CE}= 1200\text{V}$; $R_{BE}= 50\ \Omega$, $T_C= 100^{\circ}\text{C}$			5.0	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}= 7.0\text{V}$; $I_C=0$			1.0	mA
h_{FE}	DC Current Gain	$I_C= 1.5\text{A}$; $V_{CE}= 5\text{V}$	7.5			
C_{OB}	Output Capacitance	$I_E= 0$; $V_{CB}= 10\text{V}$; $f_{test}=1.0\text{kHz}$	90		450	pF

Switching times;Resistive Load

t_d	Delay Time	$I_C= 5\text{A}$, $V_{CC}= 500\text{V}$; $I_{B1}= 2\text{A}$; $t_p= 50\ \mu\text{s}$; $V_{BE(off)}= 5\text{V}$ Duty Cycle $\leq 2.0\%$		50	200	ns
t_r	Rise Time			175	2000	ns
t_s	Storage Time			1250	4000	ns
t_f	Fall Time			600	2000	ns