

isc Silicon NPN Power Transistor

MJ13330

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 200V(\text{Min})$
- High Switching Speed

APPLICATIONS

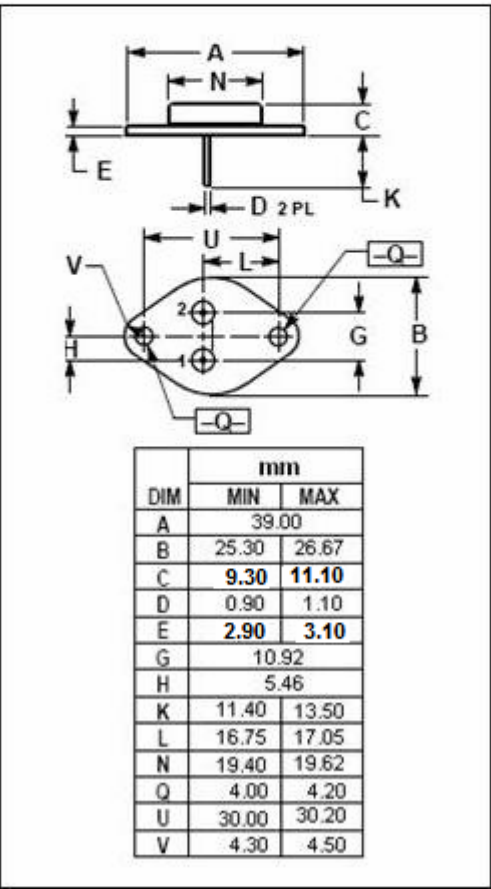
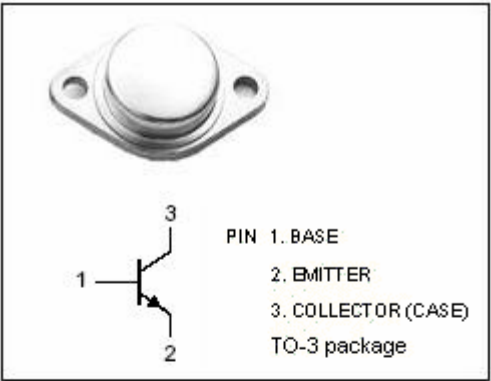
- Designed for high-voltage ,high-speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line operated switch-mode applications.
Typical applications:
- Switching regulators
- Inverters
- Solenoid and relay drivers
- Motor controls
- Deflection circuits

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CEV}	Collector-Emitter Voltage	400	V
V_{CEO}	Collector-Emitter Voltage	200	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@ $T_C=25^{\circ}\text{C}$	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**MJ13330****ELECTRICAL CHARACTERISTICS****T_C=25°C unless otherwise specified**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEO(SUS)}	Collector-Emitter Sustaining Voltage	I _C =100mA ; I _B =0	200			V
V _{CE(sat)-1}	Collector-Emitter Saturation Voltage	I _C = 10A; I _B = 1.5A I _C = 10A; I _B = 1.8A, T _C =100°C			1.5 2.5	V
V _{CE(sat)-2}	Collector-Emitter Saturation Voltage	I _C = 20A; I _B = 5A			3.5	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 10A; I _B = 1.5A I _C = 10A; I _B = 1.8A, T _C =100°C			1.8 1.8	V
I _{CEV}	Collector Cutoff Current	V _{CEV} =400V; V _{BE(off)} =1.5V V _{CEV} =400V; V _{BE(off)} =1.5V; T _C =150°C			0.25 5.0	mA
I _{CER}	Collector Cutoff Current	V _{CE} = 400V; R _{BE} = 50 Ω, T _C = 100°C			5.0	mA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 6V; I _C =0			0.5	mA
h _{FE-1}	DC Current Gain	I _C = 5A ; V _{CE} = 5V	15		75	
h _{FE-2}	DC Current Gain	I _C = 10A ; V _{CE} = 5V	8			
f _T	Current Gain-Bandwidth Product	I _C = 0.3A ; V _{CE} = 10V; f _{test} =1MHz	5		40	
C _{OB}	Output Capacitance	I _E = 0; V _{CB} = 10V; f _{test} =100kHz	100		400	pF

Switching times;Resistive Load

t _d	Delay Time	I _C = 10A , V _{CC} = 175V; I _{B1} = 1.5A V _{BE(off)} = 5V; t _p = 50 μ s; Duty Cycle≤2.0%		0.08	0.2	μ s
t _r	Rise Time			0.55	1.0	μ s
t _s	Storage Time			0.7	3.5	μ s
t _f	Fall Time			0.11	0.7	μ s