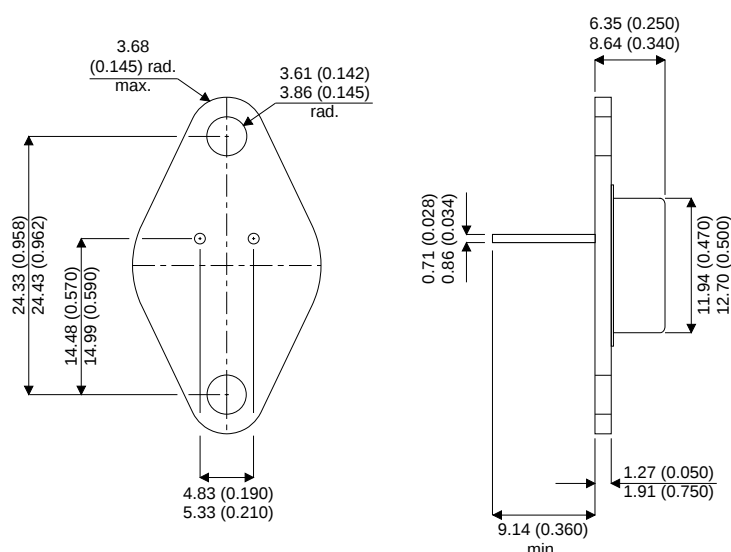


MECHANICAL DATA

Dimensions in mm



TO66 Package.

NPN TRANSISTOR MEDIUM POWER HIGH VOLTAGE

APPLICATIONS

Designed for switching regulator applications where high frequency and high voltage swings are required.

ABSOLUTE MAXIMUM RATINGS ($T_{case}=25^{\circ}\text{C}$ unless otherwise stated)

V_{CEO}	Collector – Emitter Voltage	300V
V_{CB}	Collector – Base Voltage	500V
V_{EB}	Emitter – Base Voltage	6V
I_C	Collector Current Continuous	2A
I_C	Collector Current Peak (1)	5A
I_B	Base Current	1A
P_D	Total Power Dissipation	35W
	Derate above 25 °C	0.2W / °C
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-65 to 200 °C
$R_{\theta JC}$	Thermal Resistance , Junction To Case	5.0°C / W

NOTES:

(1) Pulse Test: Pulse Width = 5.0 ms , Duty Cycle $\leq$ 10%.

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$, unless otherwise stated)

OFF CHARACTERISTICS

Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
$V_{CEO(sus)}$	Collector – Emitter Sustaining Voltage $I_C = 200mA$, $I_B = 0$	300			V
I_{CEO}	Collector Cutoff Current $V_{CE} = 150V$, $I_B = 0$			5.0	mA
I_{CEX}	Collector Cutoff Current $V_{CE} = 450V$, $V_{BE(off)} = 1.5V$ $V_{CE} = 450V$, $V_{BE(off)} = 1.5V$, $T_C = 150^{\circ}C$			2.0 5.0	mA
I_{EBO}	Emitter Cutoff Current $V_{BE} = 6V$, $I_C = 0$			0.5	mA

ON CHARACTERISTICS (1)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
h_{FE}	Current Gain $I_C = 0.1A$, $V_{CE} = 10V$	40			—
	$I_C = 0.75A$, $V_{CE} = 2V$	10		100	
	$I_C = 0.75A$, $V_{CE} = 10V$	30		150	
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage $I_C = 0.75A$, $I_B = 75mA$			1.0	V
$V_{BE(sat)}$	Base – Emitter Saturation Voltage $I_C = 0.75A$, $I_B = 75mA$			1.8	V
$V_{BE(on)}$	Base – Emitter On Voltage $I_C = 0.1A$, $V_{CE} = 10V$			1.4	V
$I_{s/b}$	Second Breakdown Collector Current ($V_{CC} = 100V$)	350			mA

DYNAMIC CHARACTERISTICS

Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
f_T	Current Gain – Bandwidth Product (2) $I_C = 200mA$, $V_{CE} = 10V$ $f_{test} = 5.0MHz$	15			MHz
C_{ob}	Output Capacitance $V_{CB} = 10V$, $I_E = 0$, $f = 1.0MHz$			120	pF

SWITCHING CHARACTERISTICS

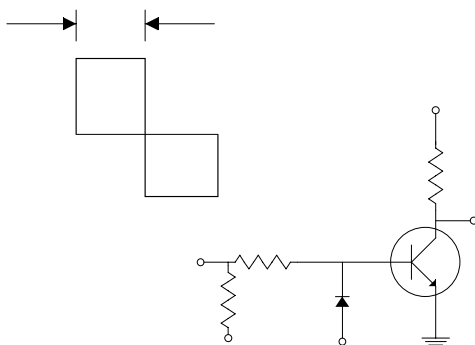
Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
t_r	Rise Time $V_{CC} = 200V$, $I_C = 0.75A$ $R_L = 200\Omega$, $I_{B1} = 100mA$			0.5	μS
t_s	Storage Time $V_{CC} = 200V$, $I_C = 0.75A$ $I_{B1} = I_{B2} = 75mA$			6.0	μS
t_f	Fall Time $V_{CC} = 200V$, $I_C = 0.75A$ $I_{B1} = I_{B2} = 75mA$			3.0	μS

NOTES:

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$

(2) $f_T = |h_{fe}| \cdot f_{test}$

FIGURE 1 – SWITCHING TIME TEST CIRCUIT



R_B AND R_C varied to obtain desired current levels.

D_1 must be fast recovery type.

For t_d and t_r , D_1 is disconnected and $V_2 = 0$.