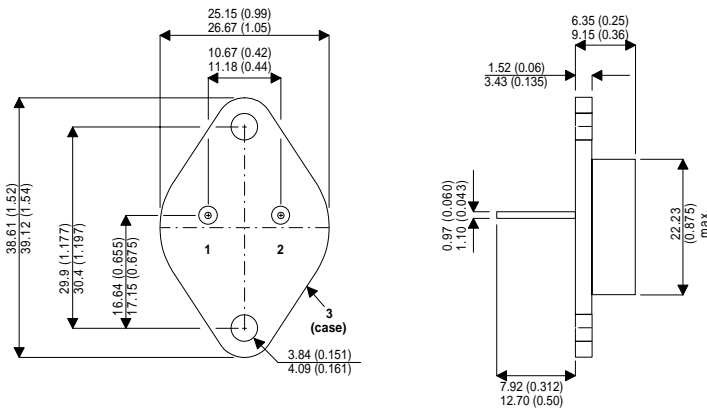


**MECHANICAL DATA**

Dimensions in mm(inches)

**NPN MULTI - EPITAXIAL  
POWER TRANSISTOR**



**TO-3**

- PIN 1 — Base
- PIN 2 — Emitter
- Case is Collector.

**FEATURES**

- HIGH CURRENT
- FAST SWITCHING
- HIGH RELIABILITY

**APPLICATIONS**

- POWER SWITCHING CIRCUITS
- MOTOR CONTROL

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

$V_{CBO}$	Collector – Base Voltage ( $I_E = 0$ )	300V
$V_{CEX}$	Collector – Emitter Voltage ( $V_{BE} = -1.5V$ )	300V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	250V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	7V
$I_C$	Collector Current	20A
$I_{CM}$	Peak Collector Current ( $t_p = 10$ ms)	25A
$I_B$	Base Current	4A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^{\circ}C$	150W
$T_{stg}$	Storage Temperature	-65 to 200°C
$T_j$	Junction Temperature	200°C

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{\text{CEO(sus)*}}$ Collector - Emitter Sustaining Voltage	$I_{\text{C}} = 0.2\text{mA}$	250			V
$V_{\text{EBO}}$ Emitter – Base Voltage	$I_{\text{E}} = 50\text{mA}$	7			V
$I_{\text{CEO}}$ Collector Cut-off Current	$V_{\text{CE}} = 200\text{V}$			1.5	mA
$I_{\text{CEX}}$ Collector Cut-off Current	$V_{\text{CE}} = 300\text{V}$ $V_{\text{BE}} = -1.5\text{V}$			1.5	mA
	$V_{\text{CE}} = 300\text{V}$ $V_{\text{BE}} = -1.5\text{V}$ $T_{\text{C}} = 125^{\circ}\text{C}$			6	
$I_{\text{EBO}}$ Emitter Cut-off Current	$I_{\text{C}} = 0$ $V_{\text{EB}} = 5\text{V}$			1	mA
$V_{\text{CE(sat)*}}$ Collector – Emitter Saturation Voltage	$I_{\text{C}} = 5\text{A}$ $I_{\text{B}} = 0.5\text{A}$		0.22	1	V
	$I_{\text{C}} = 10\text{A}$ $I_{\text{B}} = 1.25\text{A}$		0.5	1.5	
$V_{\text{BE(sat)*}}$ Base – Emitter Saturation Voltage	$I_{\text{C}} = 10\text{A}$ $I_{\text{B}} = 1.25\text{A}$		1.23	1.5	V
$h_{\text{FE}*}$ DC Current Gain	$I_{\text{C}} = 5\text{A}$ $V_{\text{CE}} = 4\text{V}$	20		60	—
	$I_{\text{C}} = 10\text{A}$ $V_{\text{CE}} = 4\text{V}$	10			
$I_{\text{S/b}}$ Second Breakdown Collector Current	$V_{\text{CE}} = 30\text{V}$ $t = 1\text{s}$	5			A
	$V_{\text{CE}} = 140\text{V}$ $t = 1\text{s}$	0.15			
$f_{\text{T}}$ Transition Frequency	$I_{\text{C}} = 1\text{A}$ $f = 10\text{MHz}$ $V_{\text{CE}} = 15\text{V}$	8			MHz
$t_{\text{on}}$ Turn–On Time	$I_{\text{C}} = 10\text{A}$ $V_{\text{CC}} = 150\text{V}$ $I_{\text{B1}} = 1.25\text{A}$		0.28	1	$\mu\text{s}$
$t_{\text{s}}$ Storage Time	$I_{\text{C}} = 10\text{A}$ $I_{\text{B1}} = 1.25\text{A}$		1.45	2	
$t_{\text{f}}$ Fall Time	$I_{\text{B2}} = -1.25\text{A}$ $V_{\text{CC}} = 150\text{V}$		0.23	0.5	

**THERMAL CHARACTERISTICS**

$R_{\theta\text{JC}}$ Thermal Resistance Junction to Case		1.17		$^{\circ}\text{C/W}$
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