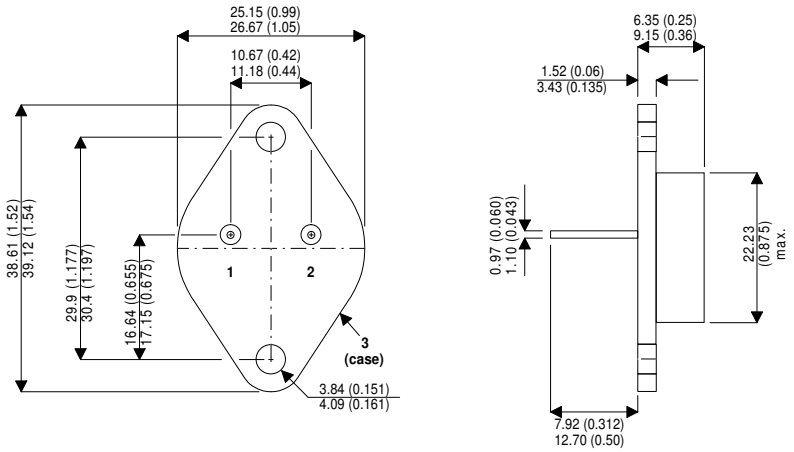
2N5038

MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO204AA)

Pin 1 = Base Pin 2 = Emitter Case = Collector

Bipolar NPN Device in a Hermetically Sealed TO3 Metal Package

APPLICATIONS

Intended for High Current Switching Applications.

ABSOLUTE MAXIMUM RATINGS

T_{CASE} = 25°C unless otherwise stated			
V_{CBO}	Collector - Base Voltage		150V
V_{CEX}	Collector - Emitter Voltage (V_{BE} = -1.5V R_{BE} = 100Ω)		150V
V_{CEO}	Collector - Emitter Voltage		90V
V_{EBO}	Emitter – Base Voltage		7V
I_C	Continuous Collector Current		20A
I_B	Base Current		5A
P_{tot}	Total Power Dissipation at	T_{case} = 25°C	140W
		Derate above 25°C	0.8W/°C
T_{stg}	Storage Temperature		-65 to 200°C

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SEME LAB

2N5038

THERMAL CHARACTERISTICS

		Max.	Unit
R_{th} j-case	Thermal resistance to case	1.25	°C/W

ELECTRICAL CHARACTERISTICS (T_{case}=25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
h_{FE}*	Forward-current transfer ratio	I_C = 2A	V_{CE} = 5.0V	50		250	
		I_C = 12A		20		100	
$V_{CE(sat)}$*	Collector to Emitter Saturation Voltage	I_C = 12A	I_B = 1.2A			1.0	V
		I_C = 20A	I_B = 5A			2.5	
$V_{BE(sat)}$*	Base to Emitter Saturated Voltage	I_C = 20A	I_B = 5A			3.3	
$V_{(BR)CEO}$*	Collector to Emitter Breakdown Voltage	I_C = 0.2A		90			
$V_{(BR)CEX}$*	Collector to Emitter Breakdown Voltage	I_C = 0.2A V_{BE} = -1.5V	R_{BE} = 100Ω	150			
I_{CEV}	Collector Cut-Off Current	V_{CE} = 140V	V_{BE} = -1.5V			50	mA
		V_{CE} = 100V T_{Case} = 150°C	V_{BE} = -1.5V			10	
I_{CEO}	Collector Cut-Off Current	V_{CE} = 70V	I_B = 0			20	
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 7V	I_C = 0			50	
		V_{EB} = 5V				5	
V_{BE}*	Base-Emitter Voltage	V_{CE} = 5.0V	I_C = 12A			1.8	V

DYNAMIC CHARACTERISTICS

t_r	Rise Time	V_{CC} = 30V	I_C=12A			0.5	µs
t_s	Storage Time	I_{B1}=-I_{B2}=1.2A				1.5	
t_f	Fall Time					0.5	
C_{ob}	Output Capacitance	I_E = 0 f = 1.0MHz	V_{CB} = 10V			500	pF
$\|h_{fe}\|$	Small Signal Current Gain	I_C = 2A f = 5MHz	V_{CE} = 10V	12			

* Pulse test t_p = 300µs, δ < 2%

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