



## Description:

This NPN transistor in a TO-3 package is designed for high voltage switching applications.



## Applications:

- Off Line Power Supplies
- Converter Circuits
- Pulse Width Modulated Regulators Specification Feature:
- High Voltage Capability
- Fast Switching Speeds
- Low Saturation Voltage

## Absolute maximum Ratings:

Collector-Emitter Voltage, $V_{CEO}$	: 400V
Collector-Emitter Voltage, $V_{CEX}$	: 450V
Collector-Emitter Voltage, $V_{CEV}$	: 650V
Emitter-Base Voltage, $V_{EB}$	: 8V
Collector Current, Continuous $I_C$	: 15A
Base Current Peak, $I_{CM}$	: 20A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$	: 175W
Derate Above $25^\circ\text{C}$	: 1.0W/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$	: $-65^\circ\text{C}$ to $+200^\circ\text{C}$
Storage Temperature Range, $T_{stg}$	: $-65^\circ\text{C}$ to $+200^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$	: $1.0^\circ\text{C/W}$
Maximum Lead Temperature (During Soldering, 1/8" from case, 5sec), $T_L$	: $+275^\circ\text{C}$

## Electrical Characteristics: ( $T_A = +25^\circ\text{C}$ Unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Max	Unit
<b>OFF Characteristics</b>					
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	$I_C = 200\text{mA}, I_B = 0$	400	-	V
Collector Cut-off Current	$I_{CEV}$	$V_{CE} = 650\text{V}, V_{EB(OFF)} = -1.5\text{V}$	-	0.1	mA
		$V_{CE} = 650\text{V}, V_{EB(OFF)} = 1.5\text{V}, T_C = +100^\circ\text{C}$	-	1.0	
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 8\text{V}, I_C = 0$	-	2.0	
<b>ON Characteristics (Note 1)</b>					
DC Current Gain	$h_{FE}$	$I_C = 15\text{A}, V_{CE} = 3\text{V}$	8	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 15\text{A}, I_B = 3\text{A}$	-	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 15\text{A}, V_{CE} = 3\text{A}$		1.5	
<b>Dynamic Characteristics</b>					
Current Gain-Bandwidth Product	$f_T$	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$	3	-	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	500	pF

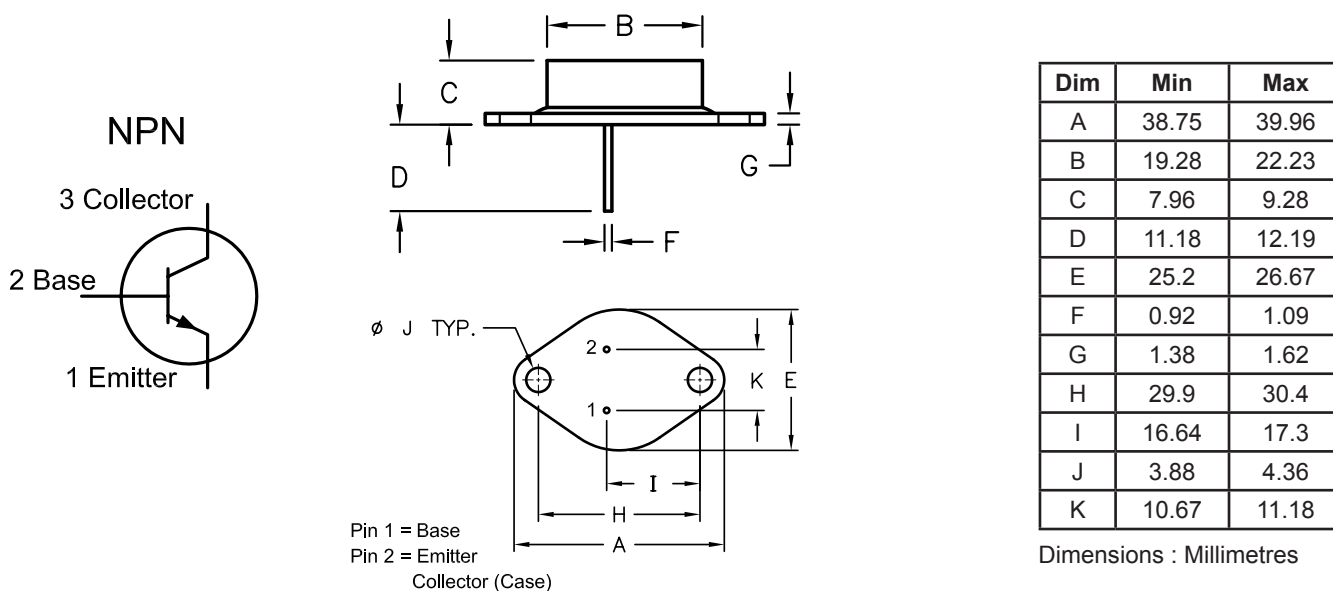
# Bipolar Transistor



## Switching Characteristics

Delay Time	$t_d$	$V_{CC} = 200V, I_C = 15A, I_{B1} = I_{B2} = 3A$ Duty Cycle $\leq 2\%$ $V_{BB} = 6V, R_L = 13.5\Omega$	-	0.2	$\mu s$
Rise Time	$t_r$		-	0.6	
Storage Time	$t_s$		-	2.5	
Fall Time	$t_f$		-	0.6	

Notes: 1. Pulse Test: Pulse Width 300 $\mu s$ , Duty Cycle  $\leq 2\%$ .



## Part Number Table

Description	Part Number
Transistor, Bipolar, Metal, TO-3, NPN	2N6678

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