

# NPN Silicon Planar Power Transistor

V<sub>CEO</sub> 140V, I<sub>c</sub> 16A, 150W, TO-3

**multicomp** PRO

**RoHS  
Compliant**



**APPLICATIONS:** Especially suited for Power Conditioning Applications

## Absolute Maximum Ratings (T<sub>a</sub> = 25°C)

Description		Symbol	Value	Units
Collector Base Voltage		V <sub>CBO</sub>	160	V
Collector Emitter Voltage		V <sub>CEO</sub>	140	V
Collector Emitter Voltage		V <sub>CEX</sub>	160	V
Emitter Base Voltage		V <sub>EBO</sub>	7	V
Collector Current	Continuous	I <sub>c</sub>	16	A
	Peak*		30	A
Base Current	Continuous	I <sub>e</sub>	4	A
	Peak*		15	A
Power Dissipation	@ T <sub>c</sub> =25°C	P <sub>d</sub>	150	W
	Derate Above 25°C		0.855	W°C
Operating and Storage Junction Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-65 to +200	°C

## Thermal Characteristics

Junction to Case	R <sub>θ(j-c)</sub>	1.17	°C/W
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\* Pulse Test: Pulse Width = 5ms, Duty Cycle ≤10%

## Electrical Characteristics at T<sub>a</sub> = 25°C

Description	Symbol	Test Condition	Min	Typ	Max	Units
Collector Emitter Sustaining Voltage	V <sub>CEO(sus)</sub>	I <sub>c</sub> =0.2A, I <sub>B</sub> =0	140	-	-	v
Collector Emitter Sustaining Voltage	V <sub>CEX(sus)*</sub>	I <sub>c</sub> =0.1A, R <sub>BE</sub> =100W, V <sub>BE(off)</sub> =1.5V	160	-	-	V
Collector Emitter Sustaining Voltage	V <sub>CER(sus)*</sub>	I <sub>c</sub> =0.2A, R <sub>BE</sub> =100W,	150	-	-	V
Collector Cut Off Current	I <sub>CEO</sub>	V <sub>CE</sub> =120V, I <sub>B</sub> =0	-	-	10	mA
Collector Cut Off Current	I <sub>CEX</sub>	V <sub>CE</sub> =140V, V <sub>BE(off)</sub> =1.5V, T <sub>C</sub> =150°C	-	-	2	mA
		V <sub>CE</sub> =140V, V <sub>BE(off)</sub> =1.5V	-	-	10	mA
Collector Cut Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =140V, I <sub>E</sub> =0	-	-	2	mA

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$V_{CE0}$  140V,  $I_C$  16A, 150W, TO-3

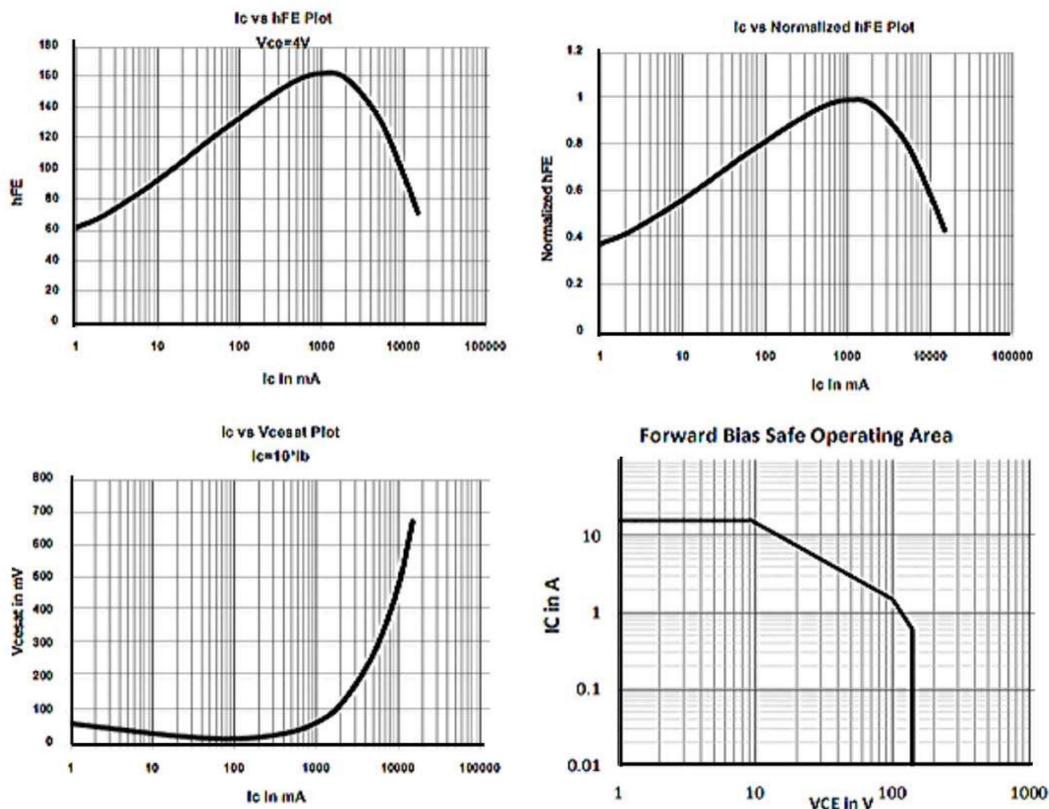
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## Electrical Characteristics at $T_a = 25^\circ\text{C}$

Description	Symbol	Test Condition	Min	Typ	Max	Units
Emitter Cut Off Current	$I_{E0}$	$V_{BE}=7V, I_C=0$	-	-	5	mA
DC Current Gain	$h_{FE}^*$	$I_C=8A, V_{CE}=4V$	15	-	120	
		$I_C=16A, V_{CE}=4V$	5	-		
Collector Emitter Saturation Voltage	$V_{CE(sat)}^*$	$I_C=8A, I_B=800mA$	-	-	1.4	V
		$I_C=16A, I_B=3.2A$	-	-	4	V
Base Emitter on Voltage	$V_{BE(on)}^*$	$I_C=8A, V_{CE}=4V$	-	-	2.2	V
<b>Dynamic Characteristics</b>						
Magnitude of Common Emitter Small Signal, Short Circuit, Forward Current Transfer Ratio	$ h_{fe} $	$I_C=1A, f=50kHz$	4	-	-	
Small Signal Current Gain	$h_{fe}$	$I_C=1A, V_{CE}=4V, f=1kHz$	40	-	-	
<b>Second Breakdown Characteristics</b>						
Second Breakdown Collector Current With Base Forward Biased	$I_{S/B}$	$V_{CE}=100V, t=1s, \text{Non repetitive}$	1.5	-	-	A

\*Pulse Test: Pulse Width = 300 $\mu$ s, Duty Cycle  $\leq$  2%

## Typical Characteristic curves



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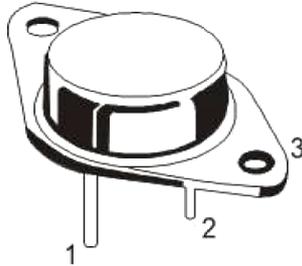
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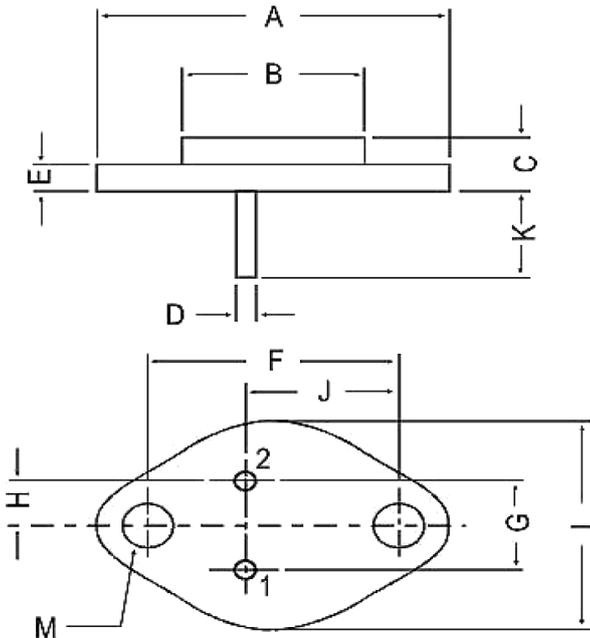
## Package Details

TO-3



### PIN CONFIGURATION

1. BASE
2. EMITTER
3. COLLECTOR



Dim	Min.	Max.
A	-	39.37
B	-	22.22
C	6.35	8.5
D	0.96	1.09
E	-	1.77
F	29.9	30.4
G	10.69	11.18
H	5.2	5.72
J	16.64	17.15
K	11.15	12.25
L	-	26.67
M	3.84	4.19

Dimensions : Millimetres

## Part Number Table

Description	Part Number
Silicon Planar Power Transistor, NPN, 140V, 16A, TO-3	2N3773

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