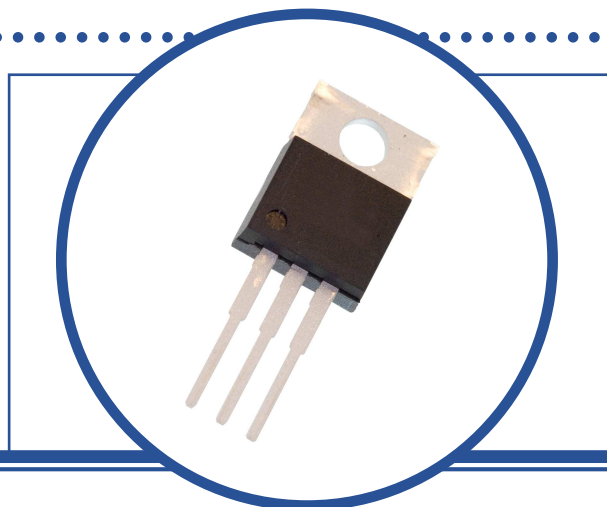


# SILICON NPN TRANSISTOR

## SM58B

- Advanced Distributed Base Technology
- Designed For Use In Electronic Ballast Applications
- Efficient Power Switching



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

$BV_{CBO}$	Collector – Base Breakdown Voltage	180V
$BV_{CEO}$	Collector – Emitter Breakdown Voltage	90V
$BV_{EBO}$	Emitter – Base Breakdown Voltage	10V
$I_C$	Collector Current	12A
$I_{CM}$	Maximum Collector Current	17A
$I_B$	Base Current	4A
$P_D$	Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	50W 0.4 W/ $^\circ\text{C}$
$T_J$	Junction Temperature Range	-55 to +150 $^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55 to +150 $^\circ\text{C}$

### THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case			2.5	$^\circ\text{C/W}$

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.



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## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
I <sub>CBO</sub>	Collector-Base Leakage Current	V <sub>CB</sub> = 180V			10	μA
		T <sub>C</sub> = 125°C			100	
I <sub>CEO</sub>	Collector-Emitter Leakage Current	V <sub>CE</sub> = 80V			100	
I <sub>EBO</sub>	Emitter-Base Leakage Current	V <sub>EB</sub> = 9V			10	
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 1.0mA	180			V
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10mA	90			
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 1.0mA	10			
V <sub>BE(sat)</sub> <sup>(1)</sup>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 3A      I <sub>B</sub> = 0.3A		0.9	1.1	
		I <sub>C</sub> = 6A      I <sub>B</sub> = 0.6A		1.2	2.0	
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1.0A      I <sub>B</sub> = 0.1A		0.1	0.2	
		I <sub>C</sub> = 3.0A      I <sub>B</sub> = 0.3A		0.3	0.6	
		I <sub>C</sub> = 6.0A      I <sub>B</sub> = 0.6A		1.0	1.5	
h <sub>FE</sub> <sup>(1)</sup>	DC Current Gain	I <sub>C</sub> = 0.3A      V <sub>CE</sub> = 5.0V	26		80	-
		I <sub>C</sub> = 3.0A      V <sub>CE</sub> = 5.0V	25		60	
		I <sub>C</sub> = 5.0A      V <sub>CE</sub> = 1.0V	8			

## DYNAMIC CHARACTERISTICS

f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 0.2A      V <sub>CE</sub> = 4.0V		20		MHz
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10V      f = 1.0MHz		44		pF

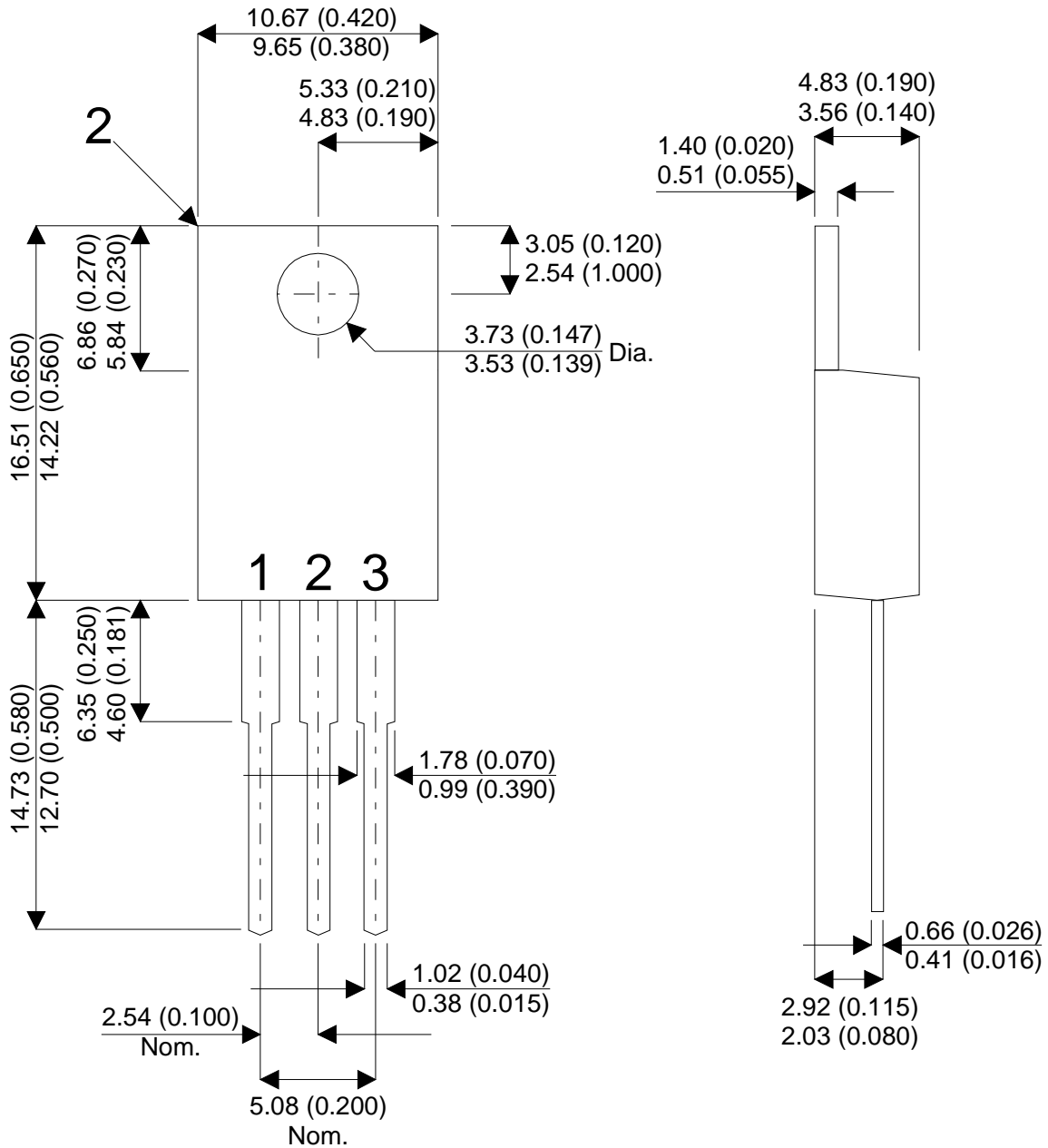
### Notes

(1) Pulse Width ≤ 300us, δ ≤ 2%

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## MECHANICAL DATA

Dimensions in mm (inches)



### TO-220

Lead 1 – Base      Lead 2 - Collector      Lead 3 - Emitter