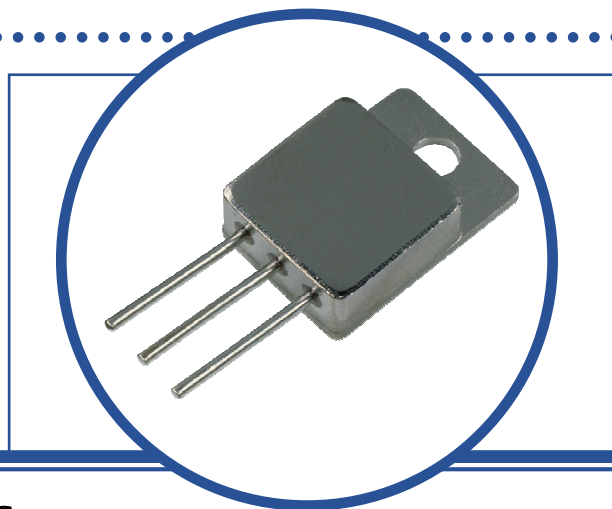


# SILICON MULTI-EPITAXIAL NPN TRANSISTOR

## 2N6678M3A

- High Voltage, Fast Switching.
- Hermetic TO-254AA Isolated Metal Package.
- Ideally suited for PWM Regulators, Power Supplies and Converter Circuits
- Screening Options Available



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

$V_{CBO}$	Collector – Base Voltage		650V
$V_{CEX}$	Collector – Emitter Voltage	$V_{BE} = -1.5\text{V}$	650V
$V_{CEO}$	Collector – Emitter Voltage		400V
$V_{EBO}$	Emitter – Base Voltage		8V
$I_C$	Continuous Collector Current		15A
$I_B$	Base Current		5A
$P_D$	Total Power Dissipation at	$T_A = 25^\circ\text{C}$	6W
		Derate Above $25^\circ\text{C}$	34.3mW/ $^\circ\text{C}$
$P_D$	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	175W
		Derate Above $25^\circ\text{C}$	1.0W/ $^\circ\text{C}$
$T_J$	Junction Temperature Range		-65 to +200 $^\circ\text{C}$
$T_{stg}$	Storage Temperature Range		-65 to +200 $^\circ\text{C}$

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	29.16	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction To Case	1.0	$^\circ\text{C/W}$

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.

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR 2N6678M3A

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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
V <sub>(BR)CEO</sub> <sup>(1)</sup>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 20mA	400			V
I <sub>CEX</sub>	Collector Cut-Off Current	V <sub>CE</sub> = 400V    V <sub>BE</sub> = -1.5V			500	nA
		V <sub>CE</sub> = 650V    V <sub>BE</sub> = -1.5V T <sub>A</sub> = 125°C			1.0	μA
I <sub>CBO</sub>	Collector Cut-Off Current	V <sub>CB</sub> = 650V    I <sub>E</sub> = 0			1.0	mA
I <sub>EBO</sub>	Emitter Cut-Off Current	V <sub>EB</sub> = 8V    I <sub>C</sub> = 0			2	
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 15A    I <sub>B</sub> = 3A T <sub>A</sub> = 125°C			1.0	V
V <sub>BE(sat)</sub> <sup>(1)</sup>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 15A    I <sub>B</sub> = 3A			2	
h <sub>FE</sub> <sup>(1)</sup>	Forward-current transfer ratio	I <sub>C</sub> = 1.0A    V <sub>CE</sub> = 3V	15		40	
		I <sub>C</sub> = 15A    V <sub>CE</sub> = 3V	8		20	
		T <sub>A</sub> = -55°C	4			

## DYNAMIC CHARACTERISTICS

h <sub>fe</sub>	Small signal forward-current transfer ratio	I <sub>C</sub> = 1.0A    V <sub>CE</sub> = 10V f = 5MHz	3		10	
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10V    I <sub>E</sub> = 0 f = 1.0MHz	150		500	pF
t <sub>d</sub>	Delay Time	I <sub>C</sub> = 15A    V <sub>CC</sub> = 200V I <sub>B1</sub> = 3A			0.1	μs
t <sub>r</sub>	Rise Time				0.6	
t <sub>s</sub>	Storage Time	I <sub>C</sub> = 15A    V <sub>CC</sub> = 200V I <sub>B1</sub> = -I <sub>B2</sub> = 3A			2.5	
t <sub>f</sub>	Fall Time				0.5	

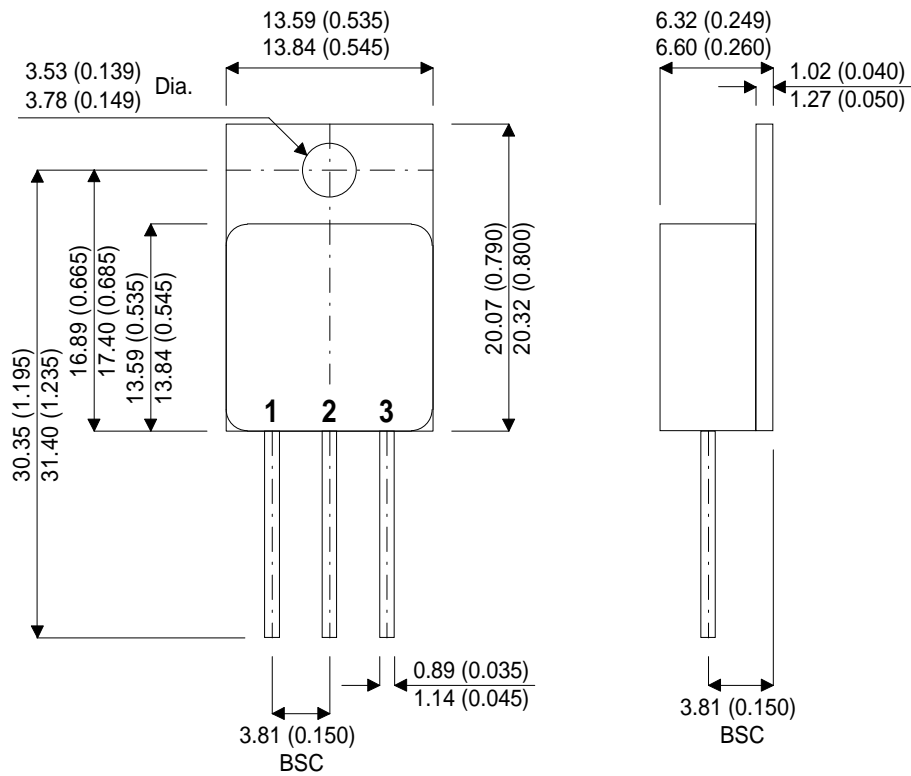
### Notes

(1) Pulse Width ≤ 300μs, δ ≤ 2%

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR 2N6678M3A

## MECHANICAL DATA

Dimensions in mm (inches)



### TO-254AA

Pin 1 - Base

Pin 2 - Collector

Pin 3 - Emitter