

20V PNP SILICON LOW SATURATION TRANSISTOR IN SOT23

Features and Benefits

- $BV_{CEO} > -20V$
- $I_C = -1.5A$ Continuous Collector Current
- $I_{CM} = -6A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -200mV @ -1A$
- $R_{SAT} = 97m\Omega$ for a low equivalent on-resistance
- h_{FE} characterised up to -6A for high current gain hold-up
- 625mW power dissipation due to SuperSOT package
- Complementary part number FMMT618
- **Lead Free, RoHS Compliant (Note 1)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

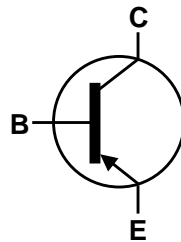
- Case: SOT-23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish annealed over Copper plated Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (Approximate)

Applications

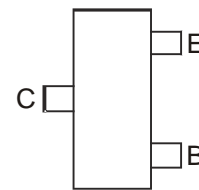
- MOSFET Gate Driving
- DC-DC Converters
- Charging circuit
- Power switches



Top View



Device Symbol



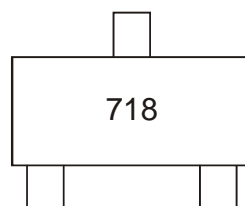
Top View
Pin-Out

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT718TA	718	7	8	3,000
FMMT718TC	718	13	8	10,000

Note: 1. No purposefully added lead.

Marking Information



718 = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

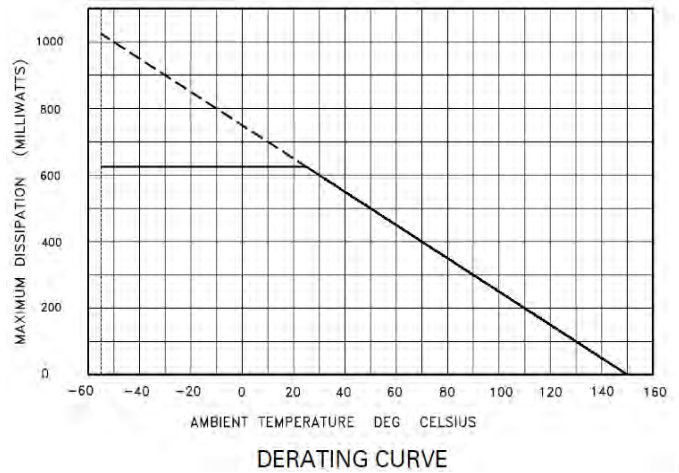
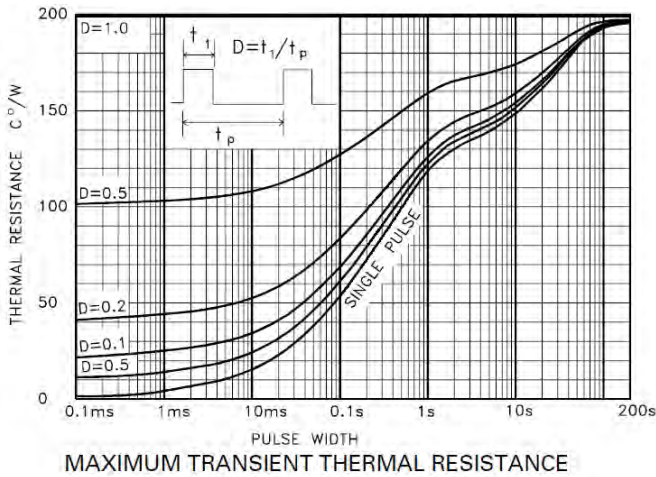
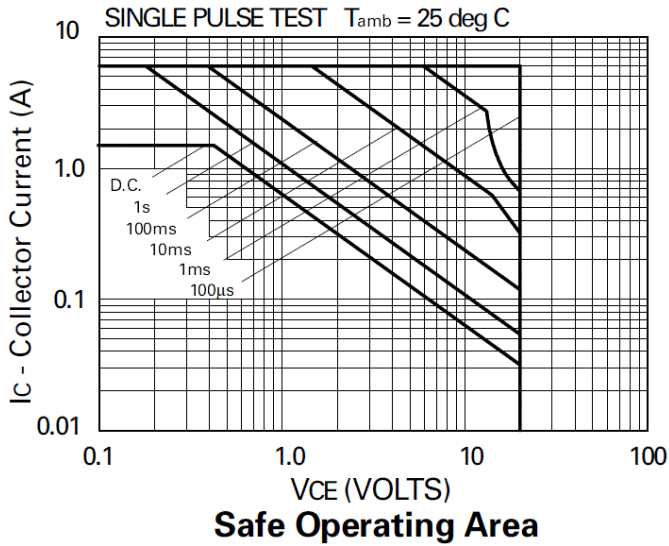
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-20	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-1.5	A
Peak Pulse Current	I_{CM}	-6	A
Base Current	I_B	-500	mA

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	625	mW
Linear Rating Factor		5	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	194	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
2. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 3. Thermal resistance from junction to solder-point (at the end of the collector lead).

Thermal Characteristics and Derating information



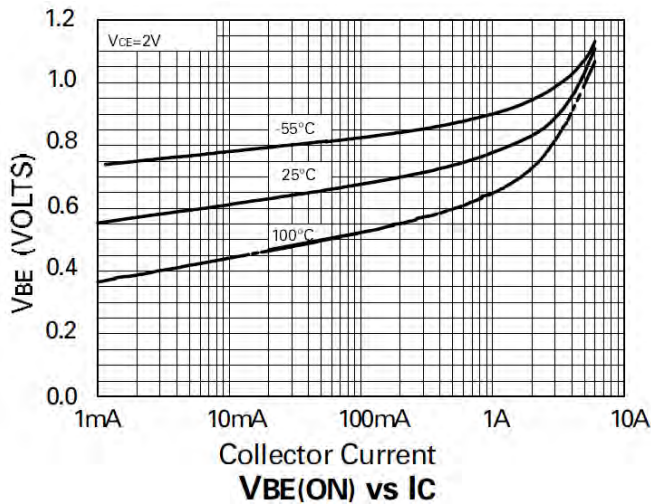
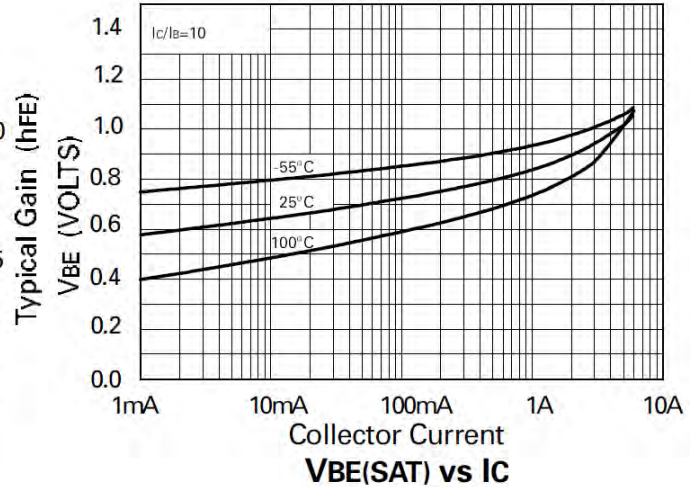
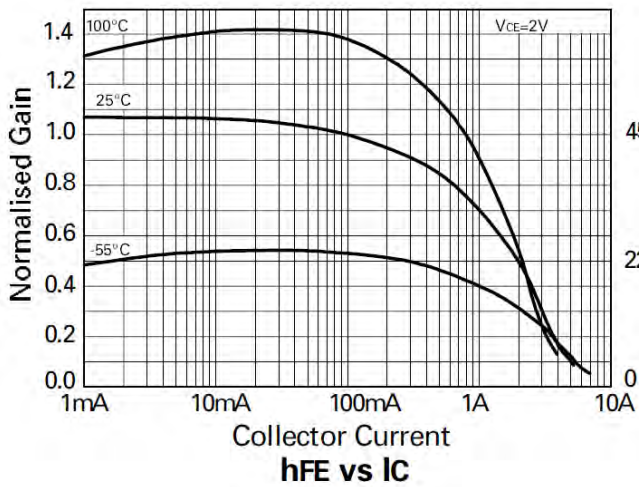
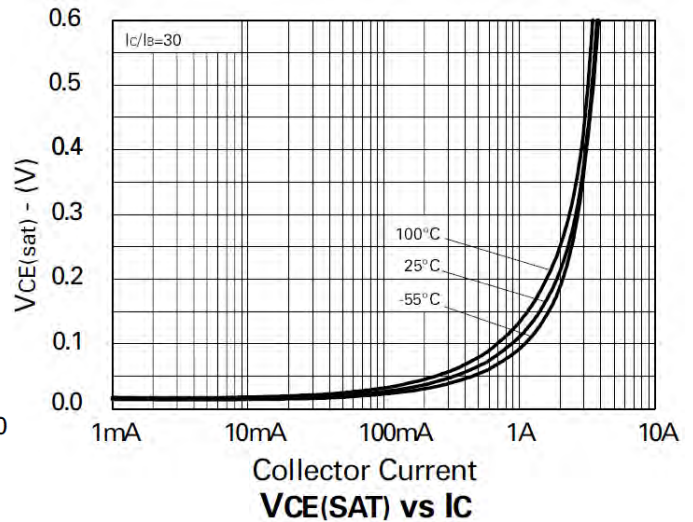
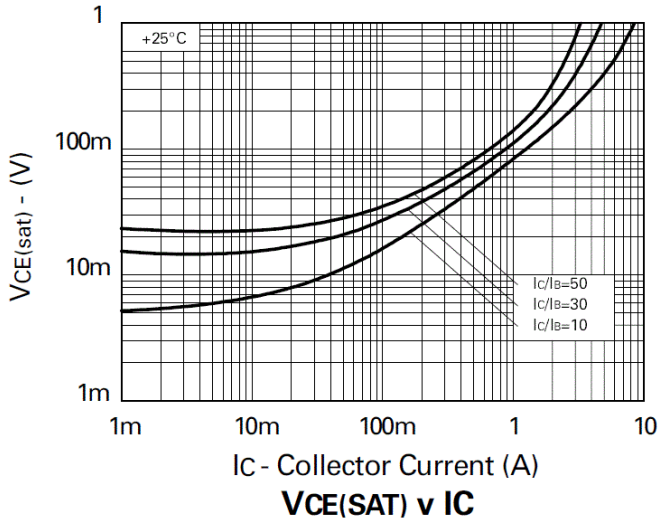
Device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

Electrical Characteristics @T_A = 25°C unless otherwise specified

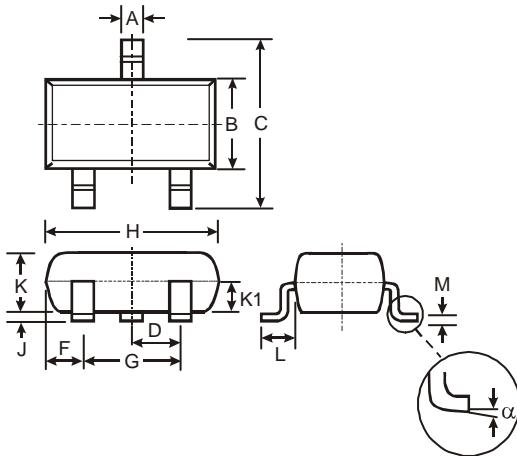
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	-20	-65		V	I _C = -100 μA
Collector-Emitter Breakdown Voltage (Note 4)	BV _{CEO}	-20	-55		V	I _C = -10 mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	-8.8		V	I _E = -100 μA
Collector Cutoff Current	I _{CB0}			-100	nA	V _{CB} = -15V
Emitter Cutoff Current	I _{EBO}			-100	nA	V _{EB} = -4V
Collector Emitter Cutoff Current	I _{CES}			-100	nA	V _{CE} = -15V
Static Forward Current Transfer Ratio (Note 4)	h _{FE}	300 300 150 35 15	475 450 230 70 30			I _C = -10mA, V _{CE} = -2V I _C = -100mA, V _{CE} = -2V I _C = -2A, V _{CE} = -2V I _C = -4A, V _{CE} = -2V I _C = -6A, V _{CE} = -2V
Collector-Emitter Saturation Voltage (Note 4)	V _{CE(sat)}		-16 -130 -145	-40 -200 -220	mV mV mV	I _C = -0.1A, I _B = -10mA I _C = -1A, I _B = -20mA I _C = -1.5A, I _B = -50mA
Base-Emitter Turn-On Voltage(Note 4)	V _{BE(on)}		-0.81	-1.0	V	I _C = -2A, V _{CE} = -2V
Base-Emitter Saturation Voltage(Note 4)	V _{BE(sat)}		-0.87	-1.0	V	I _C = -1.5A, I _B = -50mA
Output Capacitance	C _{obo}		34	43	pF	V _{CB} = -10V, f = 1MHz
Transition Frequency	f _T	150	180		MHz	V _{CE} = -10V, I _C = -50mA, f = 100MHz
Turn-On Time	t _{on}		68		ns	V _{CC} = -10V, I _C = -1A
Turn-Off Time	t _{off}		270		ns	I _{B1} = I _{B2} = -20mA

Note: 4. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%

Typical Electrical Characteristics

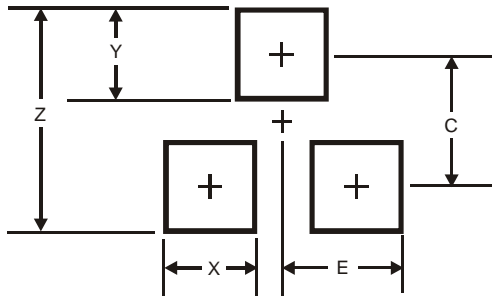


Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
1. are intended to implant into the body, or
 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2011, Diodes Incorporated

www.diodes.com