Lead-free Green

FMMTL718

20V PNP SILICON LOW SATURATION TRANSISTOR IN SOT23

Features and Benefits

- BV_{CEO} > -20V
- I_C = -1A Continuous Collector Current
- I_{CM} = -2A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -320mV @ -1A
- h_{FE} characterised up to -1.5A for high current gain hold-up
- 500mW power dissipation
- Complementary part number FMMTL618
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

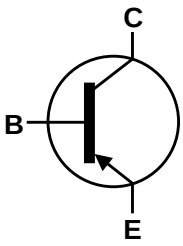
- Case: SOT-23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish annealed over Copper plated Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (Approximate)

Applications

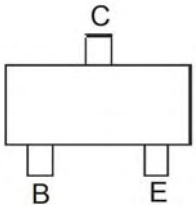
- MOSFET Gate Driving
- DC-DC Converters
- Charging circuit
- Power switches

SOT23

Top View



Device Symbol



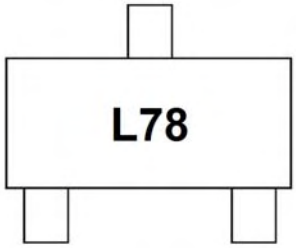
Top View
Pin-Out

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMTL718TA	L78	7	8	3,000

Notes:
1. No purposefully added lead.
2. Diodes Inc.`s "Green" Policy can be found on our website at http://www.diodes.com
3. For Packaging Details, go to our website at http://www.diodes.com.

Marking Information



L78 = Product Type Marking Code

Maximum Ratings @T_A = 25°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	A
Peak Pulse Current	I_{CM}	-2	A
Base Current	I_B	-200	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 4)	P_D	500	mW
Thermal Resistance, Junction to Ambient	(Note 4)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead	(Note 5)	$R_{\theta JL}$	197	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

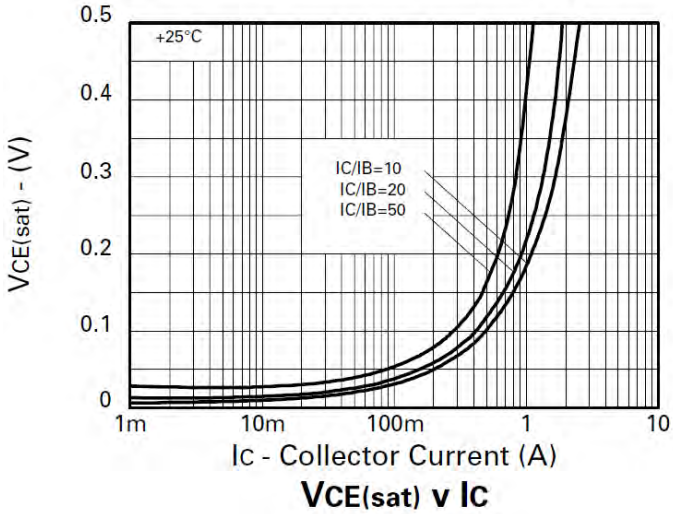
Notes: 4. For a device surface mounted on 15mm X 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
5. Thermal resistance from junction to solder-point (at the end of the collector lead).

Electrical Characteristics @T_A = 25°C unless otherwise specified

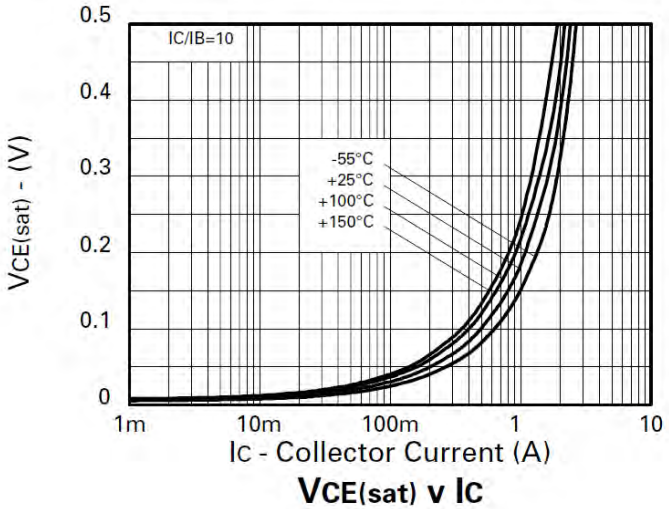
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-20	-65		V	I_C = -100 µA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-20	-55		V	I_C = -10 mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	-8.8		V	I_E = -100 µA
Collector Cutoff Current	I_{CBO}			-10	nA	V_{CB} = -15V
Emitter Cutoff Current	I_{EBO}			-10	nA	V_{EB} = -4V
Collector Emitter Cutoff Current	I_{CES}			-10	nA	V_{CE}= -15V
Static Forward Current Transfer Ratio (Note 6)	h_{FE}	300 300 200 120 50	500 450 320 200 80			I_C = -10mA, V_{CE} = -2V I_C = -100mA, V_{CE} = -2V I_C = -0.5A, V_{CE} = -2V I_C = -1A, V_{CE} = -2V I_C = -1.5A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$		-33 -130 -230 -315	-50 -180 -320 -450	mV mV mV mV	I_C =- 100mA, I_B = -10mA I_C =- 500mA, I_B = -20mA I_C = -1A, I_B = -50mA I_C = -1.5A, I_B = -100mA
Base-Emitter Turn-On Voltage(Note 6)	$V_{BE(on)}$		-0.85	-1.0	V	I_C = -1.25A, V_{CE} = -2V
Base-Emitter Saturation Voltage(Note 6)	$V_{BE(sat)}$		-0.95	-1.1	V	I_C = -1.25A, I_B = -100mA
Equivalent On-Resistance	$R_{CE(sat)}$		210		mΩ	I_C = -1.5A
Output Capacitance	C_{obo}		9	12	pF	V_{CB} = -10V, f = 1MHz
Transition Frequency	f_T		265		MHz	V_{CE} = -10V, I_C = -50mA, f = 100MHz
Turn-On Time	t_{on}		108		ns	V_{CC}=-10V, I_C =-1A
Turn-Off Time	t_{off}		121		ns	I_{B1} = I_{B2} = -10mA

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%

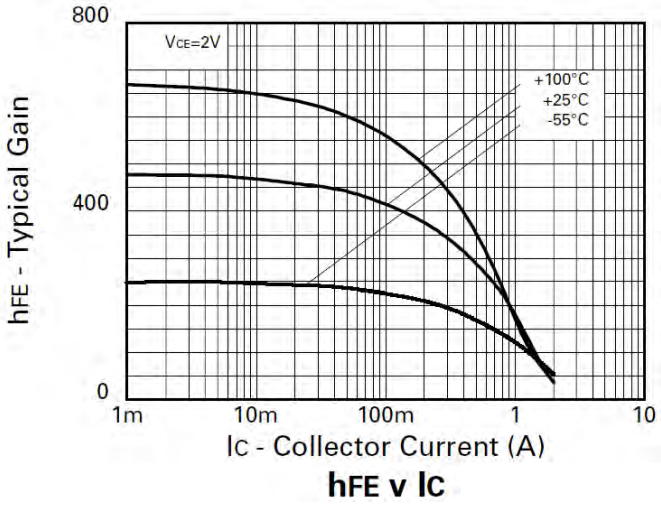
Typical Electrical Characteristics



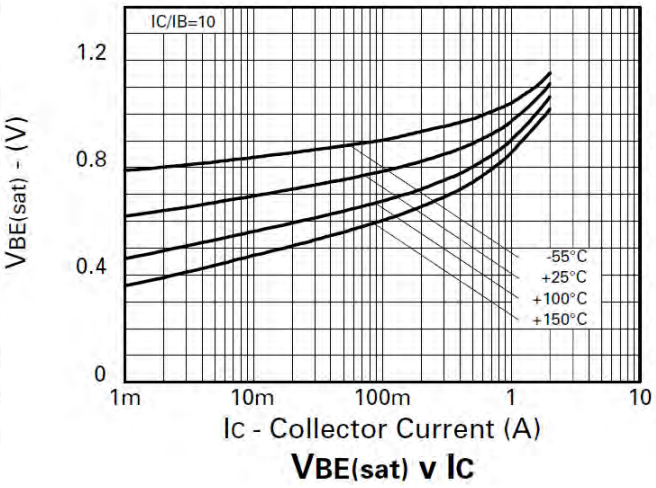
VCE(sat) v IC



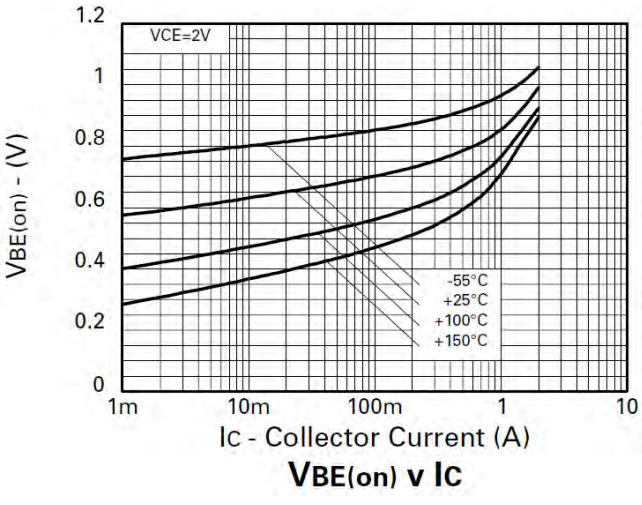
VCE(sat) v IC



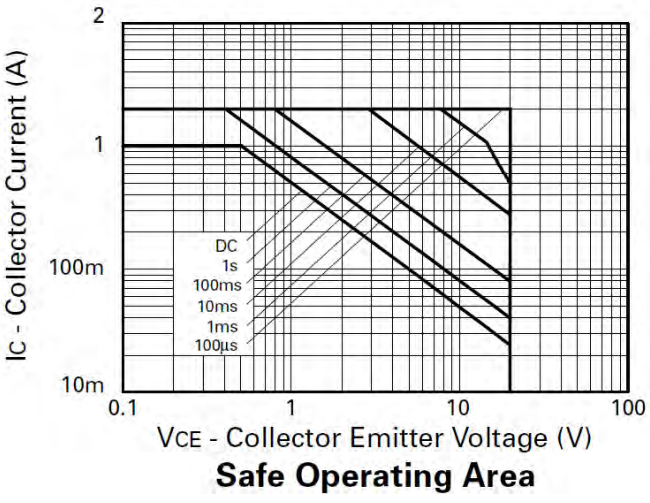
hFE v IC



VBE(sat) v IC

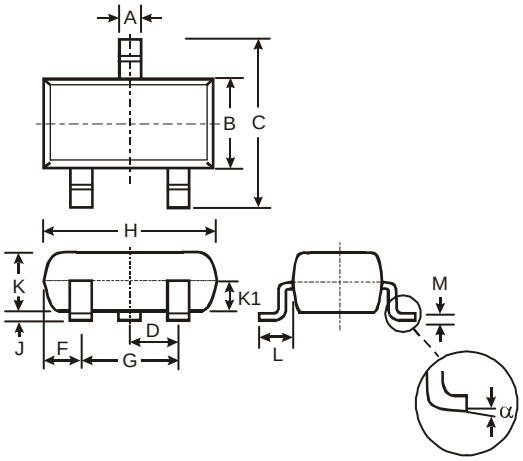


VBE(on) v IC



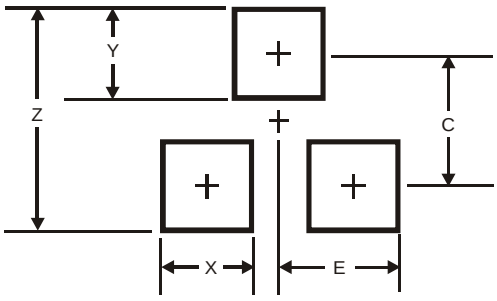
Safe Operating Area

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

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