

Description

This Bipolar Junction Transistor (BJT) has been designed to meet the stringent requirements of Automotive Applications.

Features

- $BV_{CEO} > 100V$
- $I_C = 900mA$ High Continuous Collector Current
- $I_{CM} = 5A$ Peak Pulse Current
- 625mW Power Dissipation
- $h_{FE} > 5k$ up to 2A for High Current Gain Hold up
- Complementary PNP Type: FMMT734Q
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The FMMT634Q is suitable for automotive applications requiring specific change control; it is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
- <https://www.diodes.com/quality/product-definitions/>

Mechanical Data

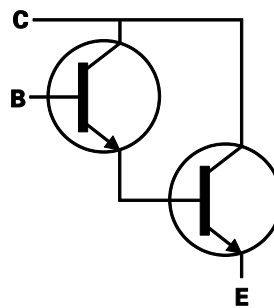
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208(63)
- Weight 0.008 grams (Approximate)

Applications

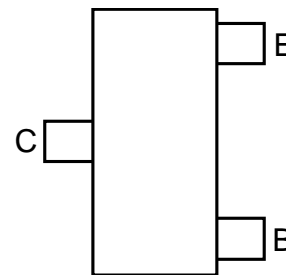
- Automotive
- Lamp
- Relay
- Solenoid Driving



Top View



Device Symbol



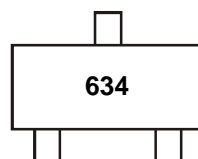
Top View
Pin-Out

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
FMMT634QTA	Automotive	634	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



634 = Product Type Marking Code

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	120	V
Collector-Emitter Voltage	V _{CEO}	100	V
Emitter-Base Voltage	V _{EBO}	12	V
Continuous Collector Current	I _C	900	mA
Peak Pulse Current	I _{CM}	5	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

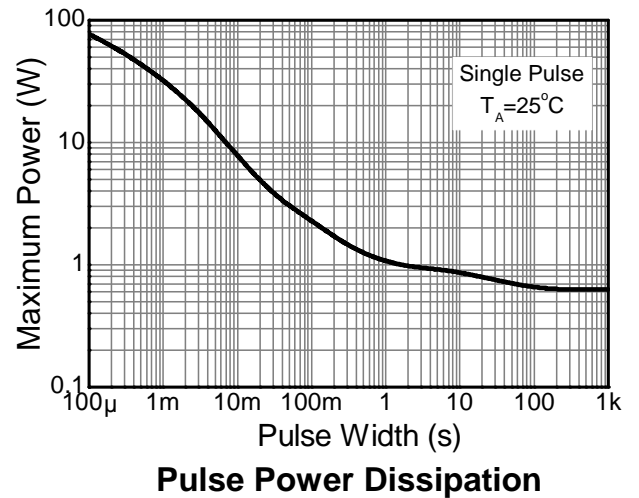
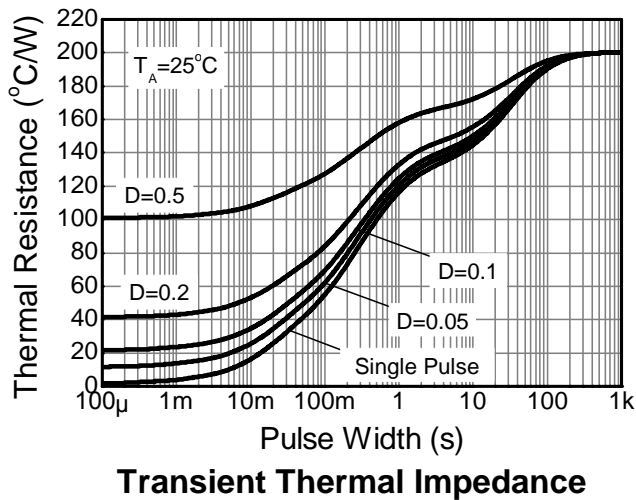
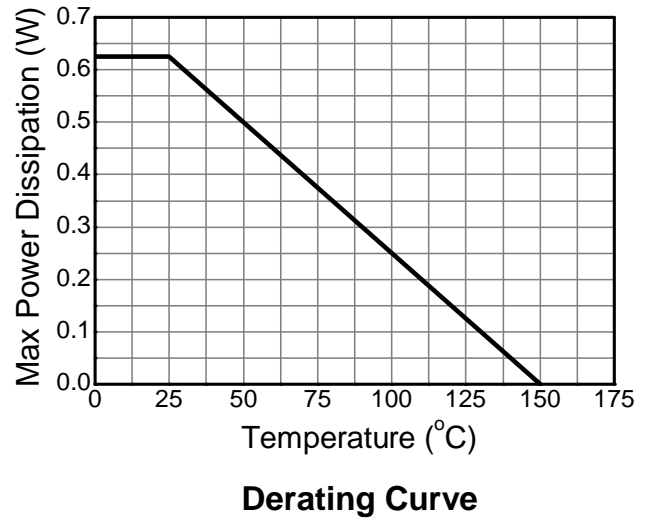
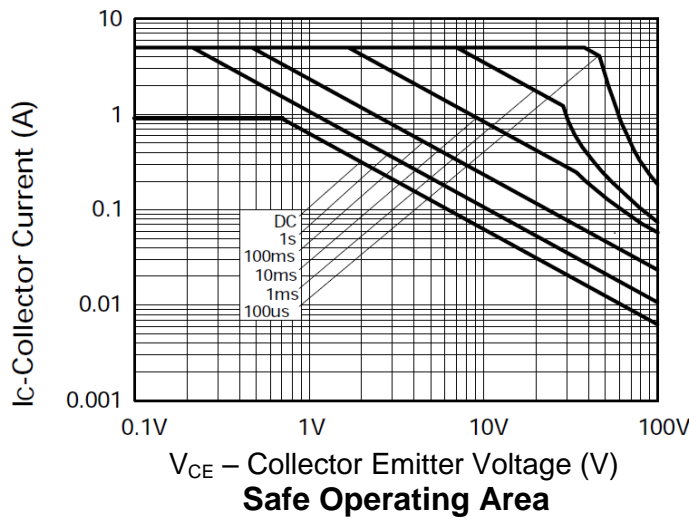
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	625	mW
Power Dissipation (Note 6)	P _D	806	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	200	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	155	°C/W
Thermal Resistance, Junction to Leads (Note 7)	R _{θJL}	194	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

- Notes:
5. For a device mounted with the exposed collector pad on 25mm × 25mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except the device is measured at t ≤ 5s.
 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating information

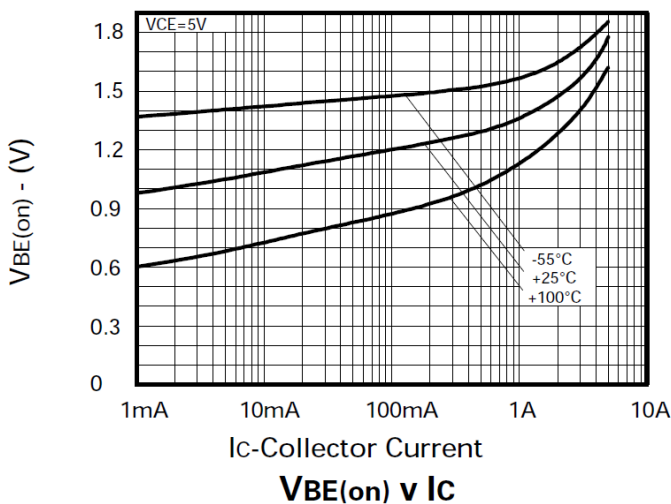
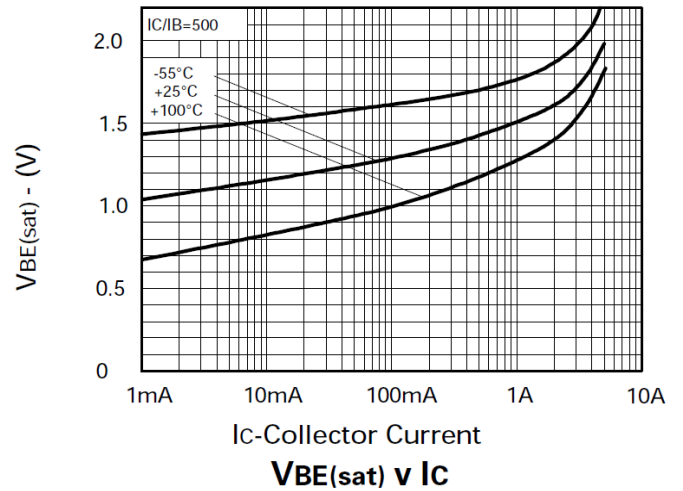
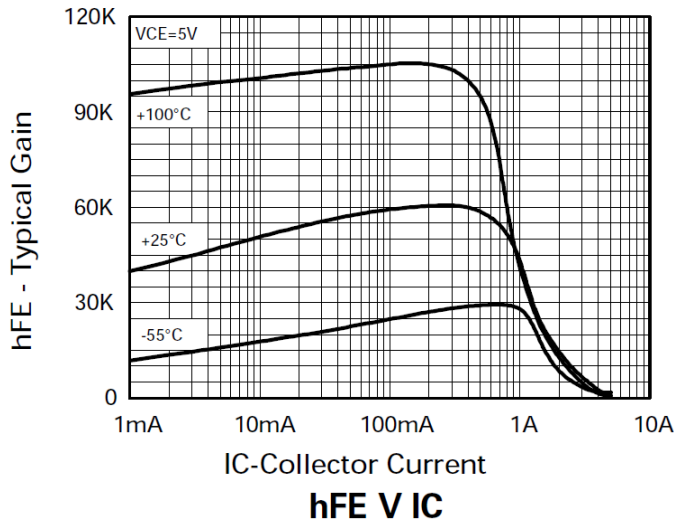
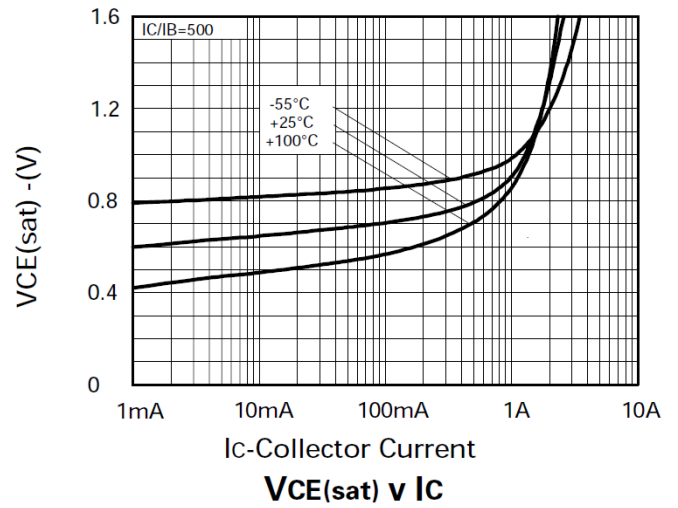
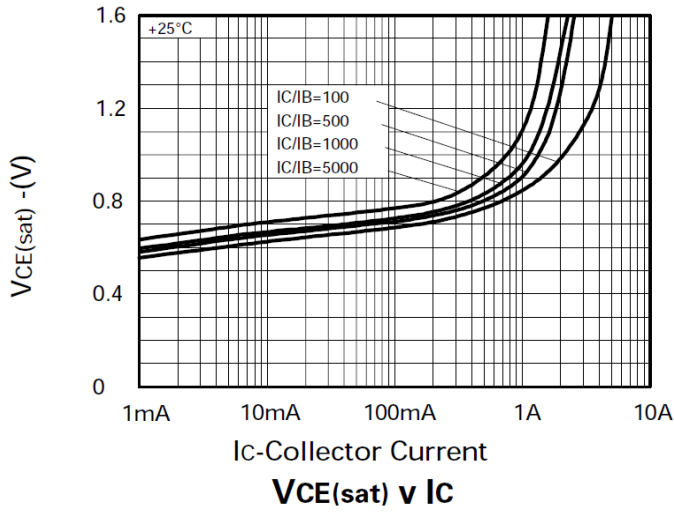


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	120	170	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	100	115	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	12	16	—	V	I _E = 100μA
Collector Cut-Off Current	I _{CBO}	—	<1	10	nA	V _{CB} = 80V
Emitter Cut-Off Current	I _{EBO}	—	<1	10	nA	V _{EB} = 7V
Collector Emitter Cut-Off Current	I _{CES}	—	<1	100	nA	V _{CES} = 80V
Static Forward Current Transfer Ratio (Note 9)	h _{FE}	— 20k 15k 5k — —	50k 60k 40k 14k 24k 600	— — — — — —	—	I _C = 10mA, V _{CE} = 5V I _C = 100mA, V _{CE} = 5V I _C = 1A, V _{CE} = 5V I _C = 2A, V _{CE} = 5V I _C = 1A, V _{CE} = 2V I _C = 5A, V _{CE} = 5V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(sat)}	— — — — — — —	0.67 0.72 0.78 0.75 0.82 0.68 0.85	0.75 0.80 1 0.85 0.93 — 0.96	V	I _C = 100mA, I _B = 1mA I _C = 250mA, I _B = 1mA I _C = 500mA, I _B = 1mA I _C = 500mA, I _B = 5mA I _C = 900mA, I _B = 5mA I _C = 900mA, I _B = 5mA, T _J = +150°C I _C = 1A, I _B = 5mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(sat)}	—	1.5	1.65	V	I _C = 1A, I _B = 5mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	—	1.33	1.50	V	I _C = 1A, V _{CE} = 5V
Transition Frequency	f _T	—	140	—	MHz	I _C = 50mA, V _{CE} = 10V, f = 100MHz
Output Capacitance	C _{obo}	—	9	20	pF	V _{CB} = 10V, f = 1MHz
Turn-On Time	t _(on)	—	290	—	ns	V _{CC} = 20V, I _C = 500mA,
Turn-Off Time	t _(off)	—	2,400	—	ns	I _{B1} = -I _{B2} = 1mA

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

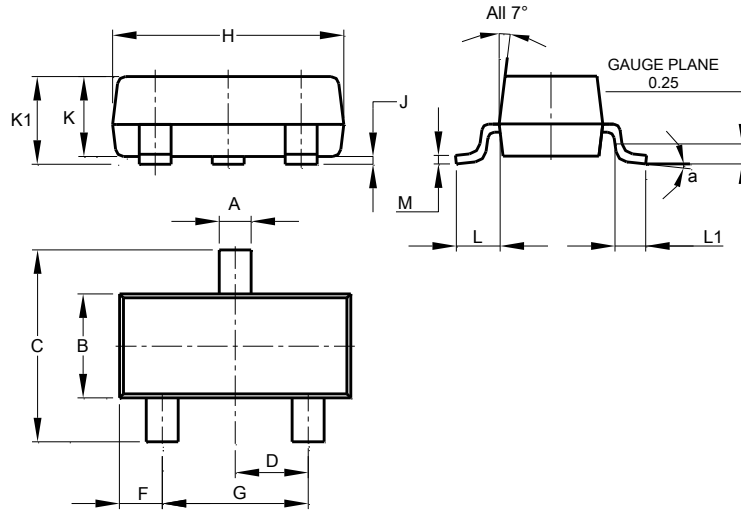
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

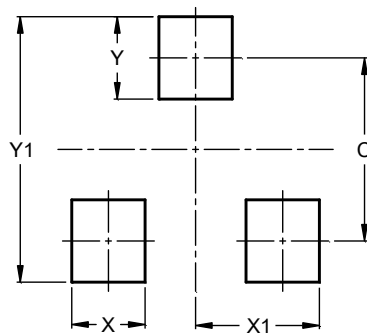


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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