

FMMT491

Medium power NPN transistor in SOT23

Summary

$BV_{CEO} > 60V$

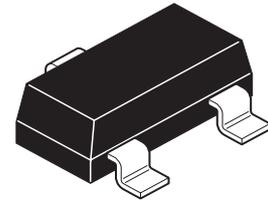
$BV_{EBO} > 7V$

$I_{C(cont)} = 1A$

$P_D = 500mW$

$R_{CE(sat)} = 160m\Omega$ at 1A

Complementary part number : FMMT591



Description

Medium power planar NPN bipolar transistor.

Features

- $V_{CE(sat)}$ maximum specification improvement
- Reverse blocking specification improvement

Applications

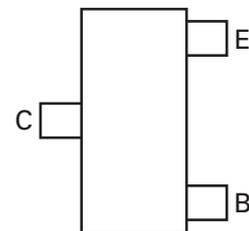
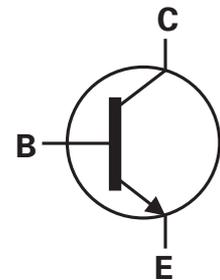
- MOSFET gate driving
- Power switches
- Motor control

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT491TA	7	8	3000

Device marking

491



Pinout - top view

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	80	V
Collector-emitter voltage	V_{CE0}	60	V
Emitter-base voltage	V_{EBO}	7	V
Continuous collector current ^(a)	I_C	1	A
Peak pulse current	I_{CM}	2	A
Power dissipation at $T_A = 25^\circ\text{C}^{(a)}$	P_D	500	mW
Linear derating factor		4	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

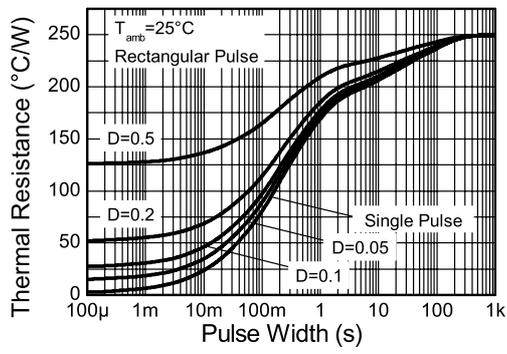
Thermal resistance

Parameter	Symbol	Value	Unit
Junction to ambient ^(a)	$R_{\theta JA}$	250	°C/W

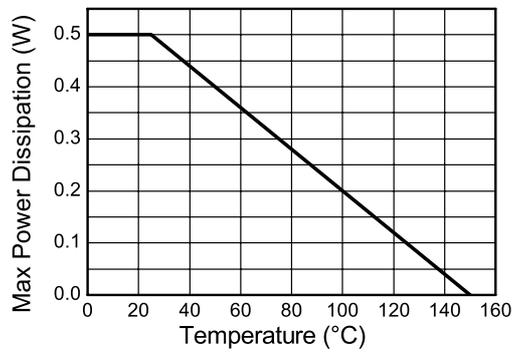
NOTES:

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

Characteristics



Transient Thermal Impedance



Derating Curve

FMMT491

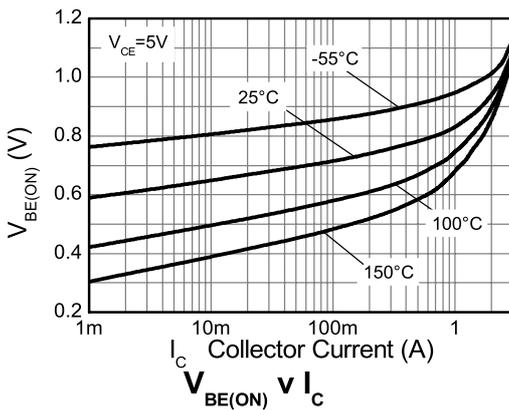
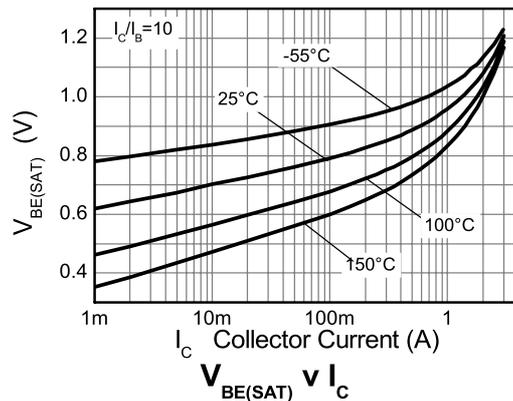
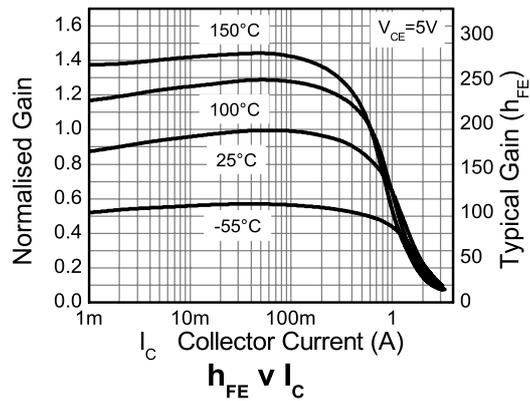
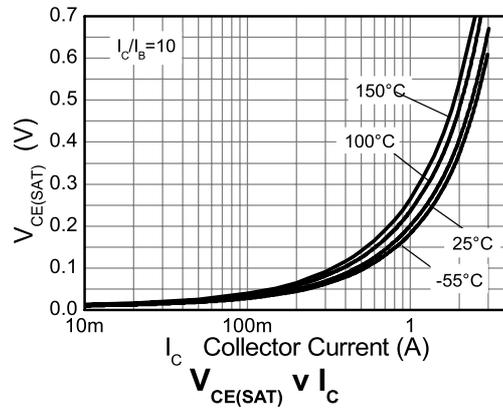
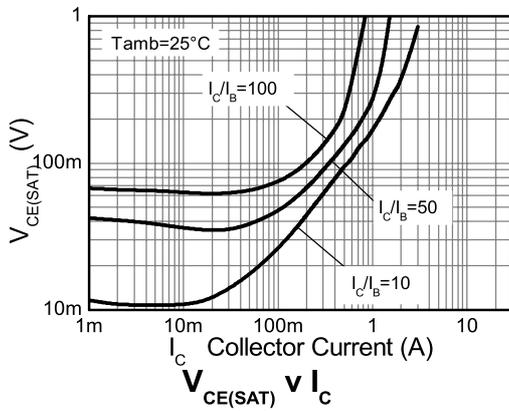
Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	80			V	$I_C = 100\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	60			V	$I_C = 10\text{mA}^{(*)}$
Emitter-base breakdown voltage	BV_{EBO}	7	8.1		V	$I_E = 100\mu\text{A}$
Collector cut-off current	I_{CBO}		<1	100	nA	$V_{CB} = 60\text{V}$
Collector – emitter current cut-off current	I_{CES}		<1	100	nA	
Emitter cut-off current	I_{EBO}		<1	100	nA	$V_{EB} = 5.6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$		100	150	mV	$I_C = 0.5\text{A}, I_B = 50\text{mA}^{(*)}$
			160	250	mV	$I_C = 1\text{A}, I_B = 100\text{mA}^{(*)}$
Base-emitter saturation voltage	$V_{BE(sat)}$		965	1100	mV	$I_C = 1\text{A}, I_B = 100\text{mA}^{(*)}$
Base-emitter turn-on voltage	$V_{BE(on)}$		830	1000	mV	$I_C = 1\text{A}, V_{CE} = 5\text{V}^{(*)}$
Static forward current transfer ratio	h_{FE}	100	140			$I_C = 1\text{mA}, V_{CE} = 5\text{V}^{(*)}$
		100	150	300		$I_C = 500\text{mA}, V_{CE} = 5\text{V}^{(*)}$
		80	120			$I_C = 1\text{A}, V_{CE} = 5\text{V}$
		30	40			$I_C = 2\text{A}, V_{CE} = 5\text{V}$
Transition frequency	f_T	150			MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output capacitance	C_{OBO}			10	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^{(*)}$

NOTES:

(*) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

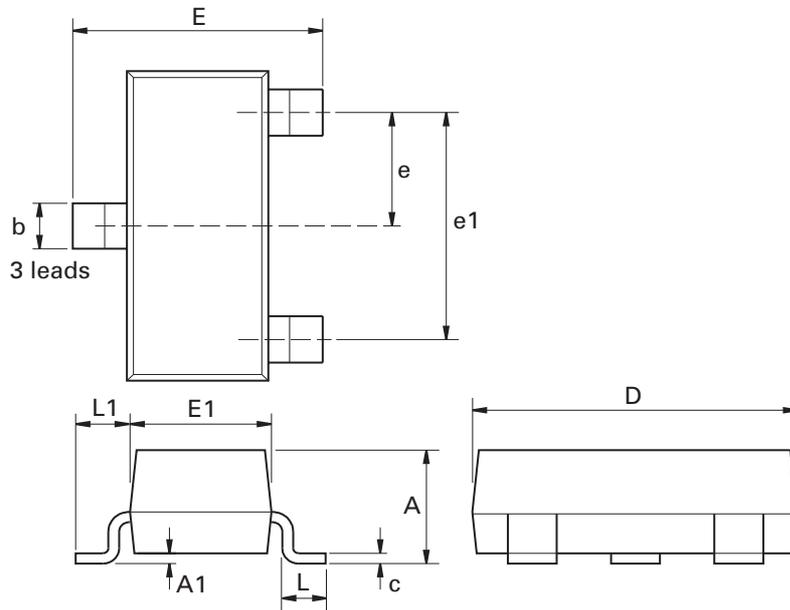
Typical characteristics



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FMMT491

Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany Telephone: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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