FMMT591A
SOT23 PNP silicon planar medium power transistor

Features

Low equivalent on resistance $R_{CE(sat)}$ = 350mΩ at 1A
Part Marking Detail -91A
Complementary type -FMMT491A

Absolute maximum ratings.

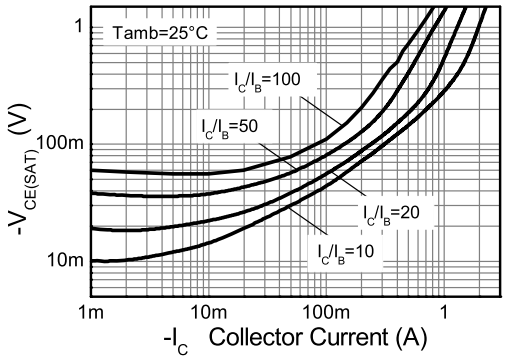
Parameter	Symbol	Value	Unit
Collector-Base voltage	V_{CBO}	-40	V
Collector-Emitter voltage	V_{CEO}	-40	V
Emitter-Base voltage	V_{EBO}	-5	V
Peak pulse current	I_{CM}	-2	A
Continuous Collector current	I_C	-1	A
Base current	I_B	-200	mA
Power dissipation at Tamb=25oC	P_{tot}	500	mW
Operating an storage temperature range	T_j ; T_{STG}	-55 to +150	°C

Electrical characteristics (at T_{amb} = 25°C)

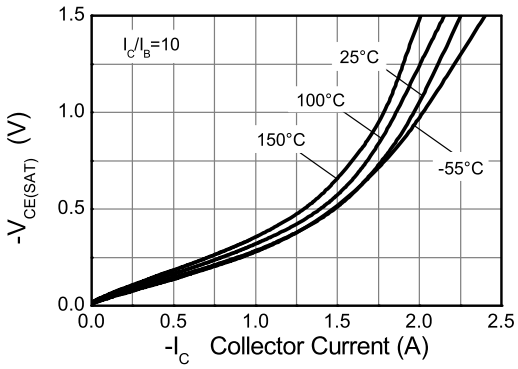
Parameter	Symbol	Min	Max	Unit	Conditions
Collector-Base breakdown voltage	$V_{(BR)CBO}$	-40		V	I_C=-100μA
Collector-Emitter breakdown voltage	$V_{(BR)CEO}$	-40		V	I_C=-10mA (*)
Emitter-Base breakdown voltage	$V_{(BR)EBO}$	-5		V	I_E=-100μA
Collector cut-off current	I_{CBO}		-100	nA	V_{CB}=-30V
Emitter cut-off current	I_{EBO}		-100	nA	V_{EB}=-4V
Collector-Emitter cut-off current	I_{CES}		-100	nA	V_{CES}=-30V
Collector-Emitter saturation voltage	$V_{CE(sat)}$		-0.2 -0.35 -0.5	V V V	I_C=-100mA, I_B=-1mA(*) I_C=-500mA, I_B=-20mA(*) I_C=-1A, I_B=-100mA(*)
Base-Emitter saturation voltage	$V_{BE(sat)}$		-1.1	V	I_C=-1A, I_B=-50mA(*)
Base-Emitter turn-on voltage	$V_{BE(on)}$		-1.0	V	I_C=-1A, V_{CE}=-5V(*)
Static forward current transfer ratio	h_{FE}	300 300 250 160 30	 800 		I_C=-1mA, I_C=-100mA(*) I_C=-500mA(*), V_{CE}=-5V I_C=-1A(*) I_C=-2A(*)
Transition frequency	f_T	150		MHz	I_C=-50mA, V_{CE}=-10V f=100MHz
Output capacitance	C_{obo}		10	pF	V_{CB}=-10V, f=1MHz

NOTES:
(*) Measured under pulse conditions. Pulse width=300μs. Duty cycle 2%

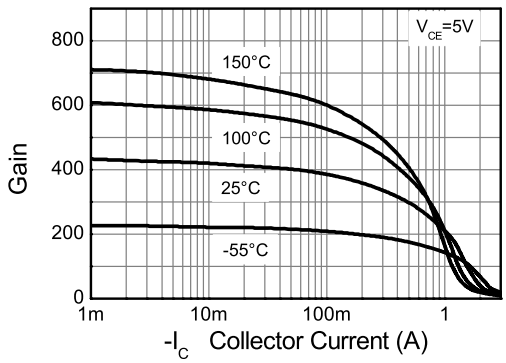
Electrical characteristics



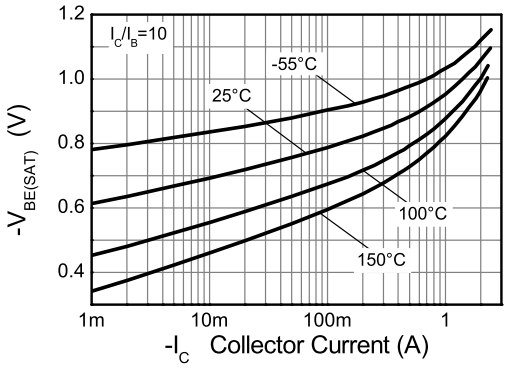
$V_{CE(SAT)}$ v I_C



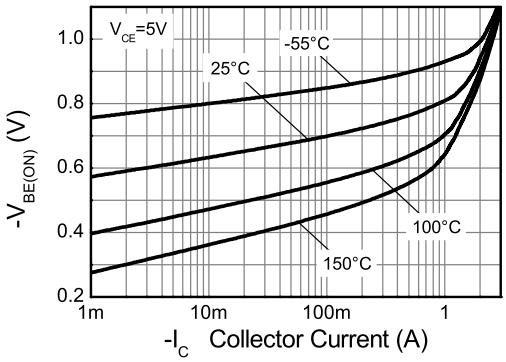
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Intentionally left blank

Definitions

Product change

Diodes Incorporated reserves the right to alter, without notice, specifications, design, price or conditions of supply of any product or service. Customers are solely responsible for obtaining the latest relevant information before placing orders.

Applications disclaimer

The circuits in this design/application note are offered as design ideas. It is the responsibility of the user to ensure that the circuit is fit for the user's application and meets with the user's requirements. No representation or warranty is given and no liability whatsoever is assumed by Diodes Inc. with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. Diodes Inc. does not assume any legal responsibility or will not be held legally liable (whether in contract, tort (including negligence), breach of statutory duty, restriction or otherwise) for any damages, loss of profit, business, contract, opportunity or consequential loss in the use of these circuit applications, under any circumstances.

Life support

Diodes Zetex 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.

Reproduction

The product specifications contained in this publication are issued to provide outline information only which (unless agreed by the company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned.

Terms and Conditions

All products are sold subjects to Diodes Inc. terms and conditions of sale, and this disclaimer (save in the event of a conflict between the two when the terms of the contract shall prevail) according to region, supplied at the time of order acknowledgement.

For the latest information on technology, delivery terms and conditions and prices, please contact your nearest Diodes Zetex sales office.

Quality of product

Diodes Zetex Semconductors Limited is an ISO 9001 and TS16949 certified semiconductor manufacturer.

To ensure quality of service and products we strongly advise the purchase of parts directly from Diodes Inc. or one of our regionally authorized distributors. For a complete listing of authorized distributors please visit: **www.zetex.com or www.diodes.com**

Diodes Inc. does not warrant or accept any liability whatsoever in respect of any parts purchased through unauthorized sales channels.

ESD (Electrostatic discharge)

Semiconductor devices are susceptible to damage by ESD. Suitable precautions should be taken when handling and transporting devices. The possible damage to devices depends on the circumstances of the handling and transporting, and the nature of the device. The extent of damage can vary from immediate functional or parametric malfunction to degradation of function or performance in use over time. Devices suspected of being affected should be replaced.

Green compliance

Diodes Inc. is committed to environmental excellence in all aspects of its operations which includes meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

All Diodes Zetex components are compliant with the RoHS directive, and through this it is supporting its customers in their compliance with WEEE and ELV directives.

Product status key:

"Preview"	Future device intended for production at some point. Samples may be available
"Active"	Product status recommended for new designs
"Last time buy (LTB)"	Device will be discontinued and last time buy period and delivery is in effect
"Not recommended for new designs"	Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued

Datasheet status key:

"Draft version"	This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.
"Provisional version"	This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.
"Issue"	This term denotes an issued datasheet containing finalized specifications. However, changes to specifications may occur, at any time and without notice.

Zetex sales offices

Europe	**Americas**	**Asia Pacific**	**Corporate Headquarters**
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Diodes Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Diodes Incorporated 15660 N Dallas Parkway Suite 850, Dallas TX75248, USA
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (1) 972 385 2810 www.diodes.com