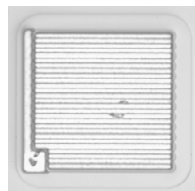


Normally – OFF Silicon Carbide Junction Transistor

V_{DS}	=	650 V
$V_{DS(ON)}$	=	2.1 V
I_D	=	5 A
$R_{DS(ON)}$	=	415 mΩ

Features

- 250 °C maximum operating temperature
- Temperature independent switching performance
- Gate oxide free SiC switch
- Suitable for connecting an anti-parallel diode
- Positive temperature coefficient for easy paralleling
- Low gate charge
- Low intrinsic capacitance



Advantages

- Low switching losses
- Higher efficiency
- High temperature operation
- High short circuit withstand capability

Applications

- Down Hole Oil Drilling, Geothermal Instrumentation
- Hybrid Electric Vehicles (HEV)
- Solar Inverters
- Switched-Mode Power Supply (SMPS)
- Power Factor Correction (PFC)
- Induction Heating
- Uninterruptible Power Supply (UPS)
- Motor Drives

Maximum Ratings at $T_j = 250\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values	Unit
Drain – Source Voltage	V_{DS}	$V_{GS} = 0\text{ V}$	650	V
Continuous Drain Current	I_D	$T_C = 165\text{ °C}$	5	A
Gate Peak Current	I_{GM}		5	A
Reverse Gate – Source Voltage	V_{GS}		200	V
Reverse Drain – Source Voltage	V_{DS}		40	V
Power Dissipation	P_{tot}	$T_C = 25\text{ °C}$	7	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to 250	°C

Electrical Characteristics at $T_j = 250\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

On Characteristics

Drain – Source On Voltage	$V_{DS(ON)}$	$I_D = 5\text{ A}, I_G = 100\text{ mA}, T_j = 25\text{ °C}$	2.1			V
		$I_D = 5\text{ A}, I_G = 250\text{ mA}, T_j = 175\text{ °C}$	4.1			
		$I_D = 5\text{ A}, I_G = 250\text{ mA}, T_j = 250\text{ °C}$	6.3			
Drain – Source On Resistance	$R_{DS(ON)}$	$I_D = 5\text{ A}, I_G = 100\text{ mA}, T_j = 25\text{ °C}$	415			mΩ
		$I_D = 5\text{ A}, I_G = 250\text{ mA}, T_j = 175\text{ °C}$	820			
		$I_D = 5\text{ A}, I_G = 250\text{ mA}, T_j = 250\text{ °C}$	1310			
Gate Forward Voltage	$V_{GS(FWD)}$	$I_G = 500\text{ mA}, T_j = 25\text{ °C}$	3.3			V
		$I_G = 500\text{ mA}, T_j = 250\text{ °C}$	3.2			
DC Current Gain	β	$V_{DS} = 5\text{ V}, I_D = 5\text{ A}, T_j = 25\text{ °C}$	120			
		$V_{DS} = 5\text{ V}, I_D = 5\text{ A}, T_j = 250\text{ °C}$	85			

Off Characteristics

Drain Leakage Current	I_{DSS}	$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 25\text{ °C}$	7			nA
		$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 175\text{ °C}$	25			
		$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 250\text{ °C}$	105			

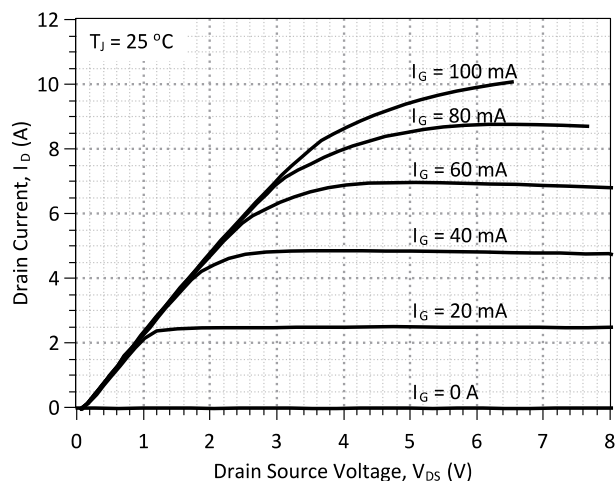


Figure 1: Typical Output Characteristics at 25 °C

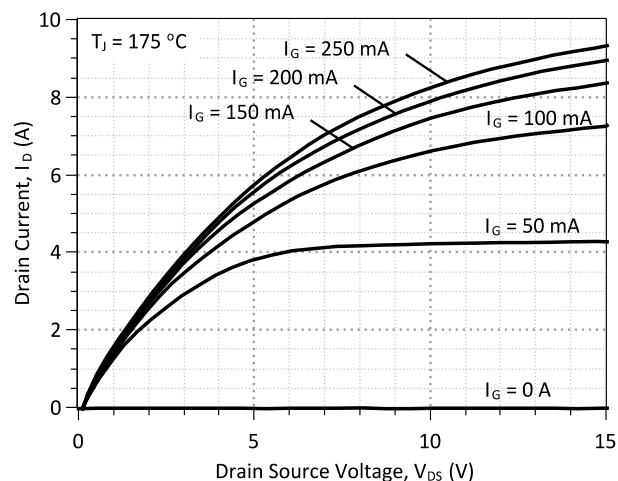


Figure 2: Typical Output Characteristics at 175 °C

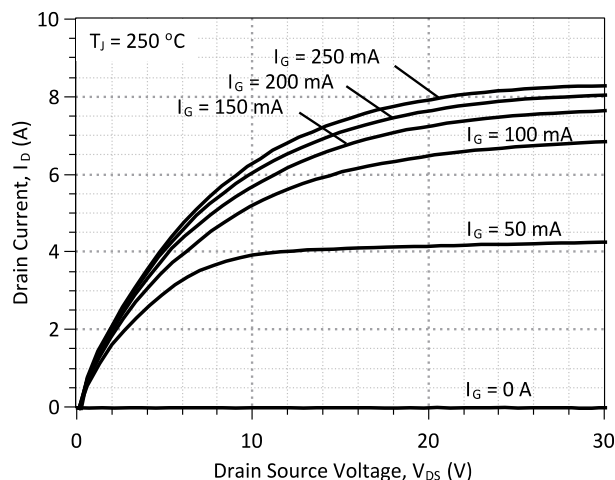


Figure 3: Typical Output Characteristics at 250 °C

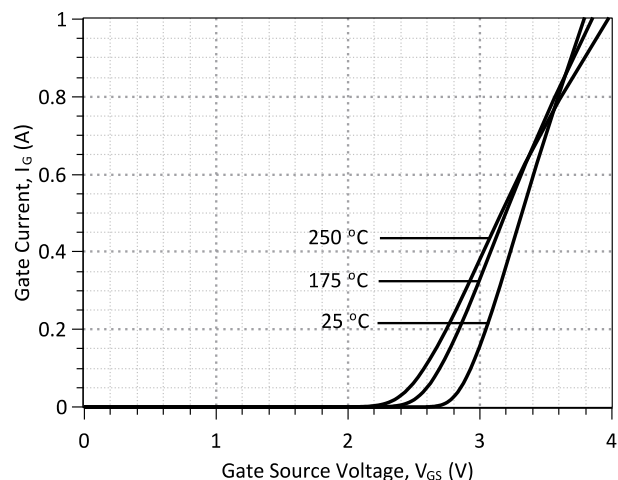


Figure 4: Typical Gate Source I-V Characteristics vs. Temperature

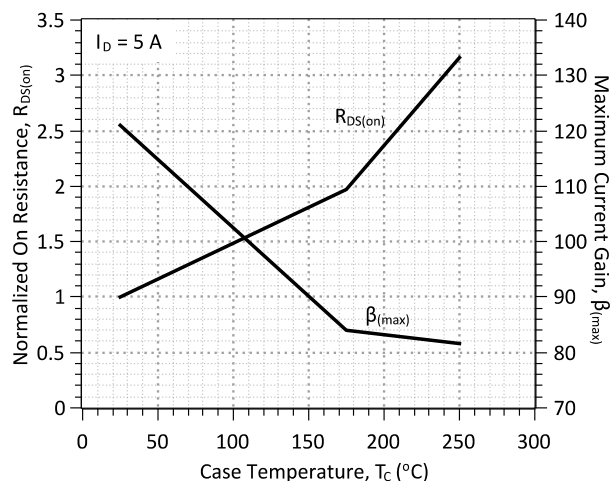


Figure 5: Normalized On-Resistance and Current Gain vs. Temperature

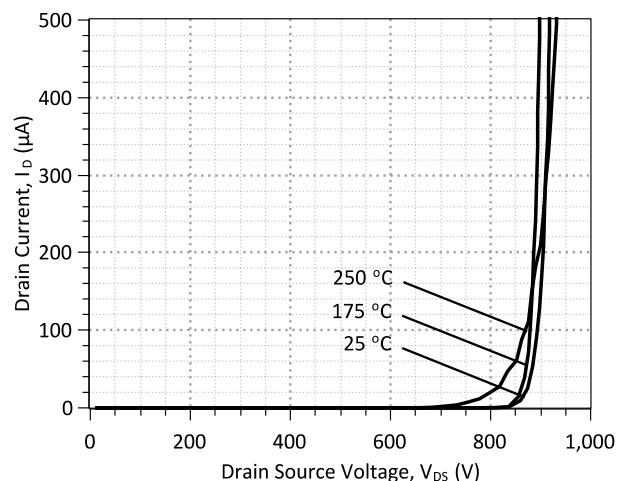


Figure 6: Typical Blocking Characteristics

Revision History

Date	Revision	Comments	Supersedes
2013/02/01	0	Initial release	

Published by

GeneSiC Semiconductor, Inc.
43670 Trade Center Place Suite 155
Dulles, VA 20166

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SPICE Model Parameters

Copy the following code into a SPICE software program for simulation of the GA05JT065-CAL device.

```
*      MODEL OF GeneSiC Semiconductor Inc.
*
*      $Revision:   1.0           $
*      $Date:      06-SEP-2013    $
*
*      GeneSiC Semiconductor Inc.
*      43670 Trade Center Place Ste. 155
*      Dulles, VA 20166
*      http://www.genesicsemi.com/index.php/sic-products/sjt
*
*      COPYRIGHT (C) 2013 GeneSiC Semiconductor Inc.
*      ALL RIGHTS RESERVED
*
*      These models are provided "AS IS, WHERE IS, AND WITH NO WARRANTY
*      OF ANY KIND EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED
*      TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
*      PARTICULAR PURPOSE."
*      Models accurate up to 2 times rated drain current.
*
.model GA05JT065 NPN
+ IS      1.22E-47
+ ISE     3.91E-27
+ EG      3.23
+ BF      110
+ BR      0.55
+ IKF     999
+ NF      1
+ NE      2.022
+ RB      0.26
+ RE      0.231
+ RC      0.16
+ CJC     1.37E-10
+ VJC     3.173990516
+ MJC     0.436428533
+ CJE     3.36E-10
+ VJE     2.944816511
+ MJE     0.493905327
+ XTI     3
+ XTB     -0.45
+ TRC1    1.50E-02
+ VCEO    800
+ ICRATING 4
+ MFG     GeneSiC_Semiconductor
*
*      End of GA05JT065-CAL SPICE Model
```