



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Normally – OFF Silicon Carbide Super Junction Transistor

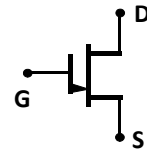
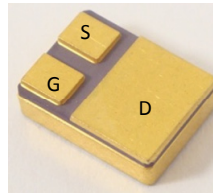
V_{DS}	=	650 V
$V_{DS(ON)}$	=	1.7 V
I_D	=	16 A
$R_{DS(ON)}$	=	105 mΩ

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

Package

- RoHS Compliant



SMD0.5 / TO – 276 (Hermetic Package)

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	$T_C = 155\text{ °C}$	16	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}	$T_C = 25\text{ °C}$	27	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to 250	°C

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

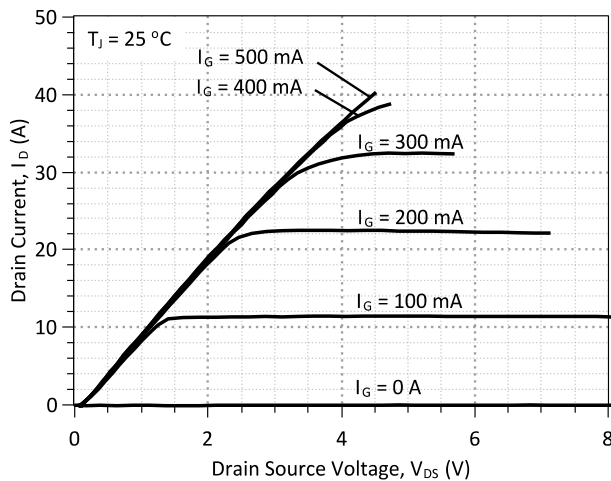
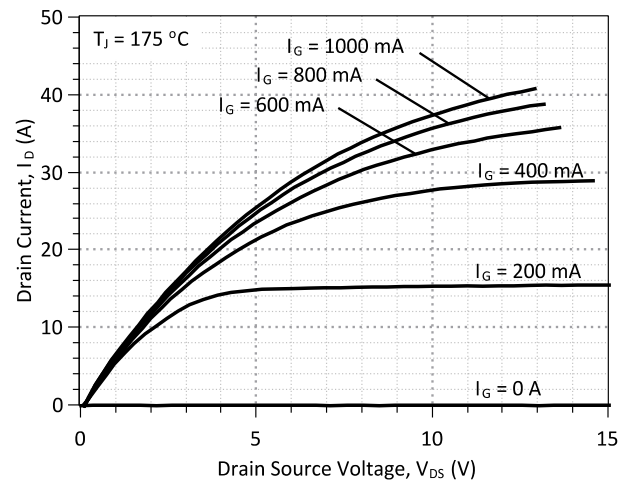
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
On Characteristics						
Drain – Source On Voltage	$V_{DS(ON)}$	$I_D = 16\text{ A}, I_G = 500\text{ mA}, T_j = 25\text{ °C}$		1.7		V
		$I_D = 16\text{ A}, I_G = 1000\text{ mA}, T_j = 175\text{ °C}$		2.7		
		$I_D = 16\text{ A}, I_G = 1000\text{ mA}, T_j = 250\text{ °C}$		4.3		
Drain – Source On Resistance	$R_{DS(ON)}$	$I_D = 16\text{ A}, I_G = 500\text{ mA}, T_j = 25\text{ °C}$		105		mΩ
		$I_D = 16\text{ A}, I_G = 1000\text{ mA}, T_j = 175\text{ °C}$		180		
		$I_D = 16\text{ A}, I_G = 1000\text{ mA}, T_j = 250\text{ °C}$		290		
Gate Forward Voltage	$V_{GS(FWD)}$	$I_G = 500\text{ mA}, T_j = 25\text{ °C}$		3		V
		$I_G = 500\text{ mA}, T_j = 250\text{ °C}$		2.6		
DC Current Gain	β	$V_{DS} = 5\text{ V}, I_D = 20\text{ A}, T_j = 25\text{ °C}$		115		
		$V_{DS} = 5\text{ V}, I_D = 20\text{ A}, T_j = 250\text{ °C}$		75		

Off Characteristics

Drain Leakage Current	I_{DSS}	$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 25\text{ °C}$		1		μA
		$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 175\text{ °C}$		7		
		$V_R = 650\text{ V}, V_{GS} = 0\text{ V}, T_j = 250\text{ °C}$		45		

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

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 35\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$, $T_{vj} = 25\text{ }^\circ\text{C}$		1534		pF
Output Capacitance	C_{oss}			157		pF
Reverse Transfer Capacitance	C_{rss}			157		pF
Switching Characteristics						
Turn On Delay Time	$t_{d(on)}$	$V_{DD} = 400\text{ V}$, $I_D = 20\text{ A}$, $R_{G(on)} = R_{G(off)} = 22\ \Omega$, $V_{GS} = -8/15\text{ V}$, $T_j = 175\text{ }^\circ\text{C}$ Refer to Figure 10 for gate drive current waveforms		5		ns
Rise Time	t_r			37		ns
Turn Off Delay Time	$t_{d(off)}$			68		ns
Fall Time	t_f			78		ns
Turn-On Energy Per Pulse	E_{on}			66		μJ
Turn-Off Energy Per Pulse	E_{off}			365		μJ
Total Switching Energy	E_{ts}		431		μJ	
Turn On Delay Time	$t_{d(on)}$	$V_{DD} = 400\text{ V}$, $I_D = 20\text{ A}$, $R_{G(on)} = R_{G(off)} = 22\ \Omega$, $V_{GS} = -8/15\text{ V}$, $T_j = 250\text{ }^\circ\text{C}$ Refer to Figure 10 for gate drive current waveforms		7		ns
Rise Time	t_r			38		ns
Turn Off Delay Time	$t_{d(off)}$			85		ns
Fall Time	t_f			86		ns
Turn-On Energy Per Pulse	E_{on}			64		μJ
Turn-Off Energy Per Pulse	E_{off}			395		μJ
Total Switching Energy	E_{ts}		459		μJ	
Thermal Characteristics						
Thermal resistance, junction - case	$R_{th(jc)}$		0.6			$^\circ\text{C/W}$


Figure 1: Typical Output Characteristics at 25 °C

Figure 2: Typical Output Characteristics at 175 °C

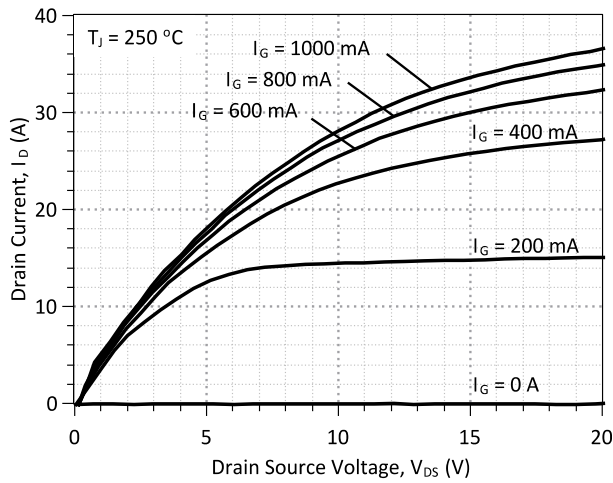


Figure 3: Typical Output Characteristics at 250 °C

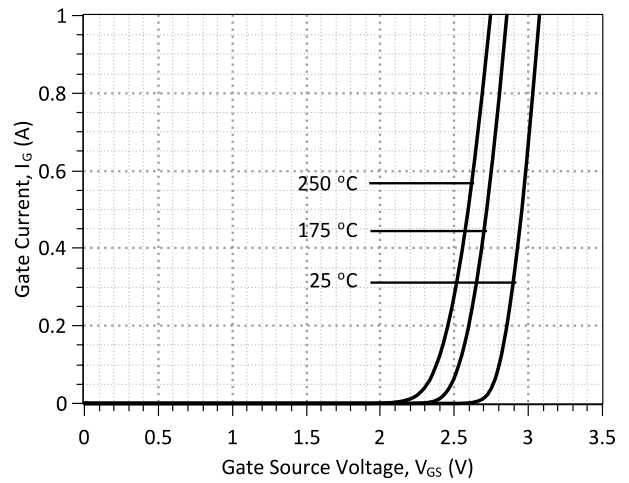


Figure 4: Typical Gate Source I-V Characteristics vs. Temperature

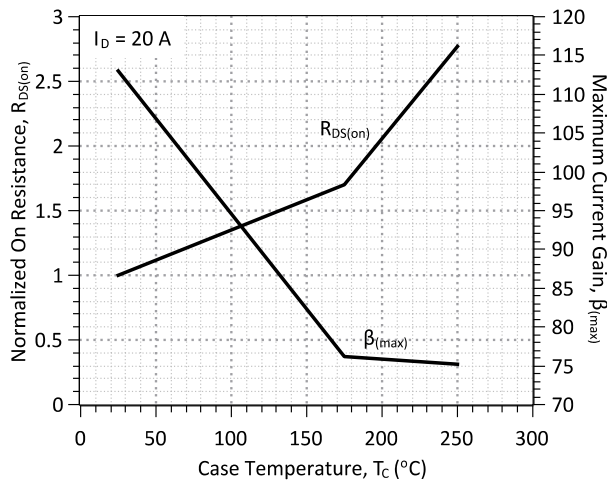


Figure 5: Normalized On-Resistance and Current Gain vs. Temperature

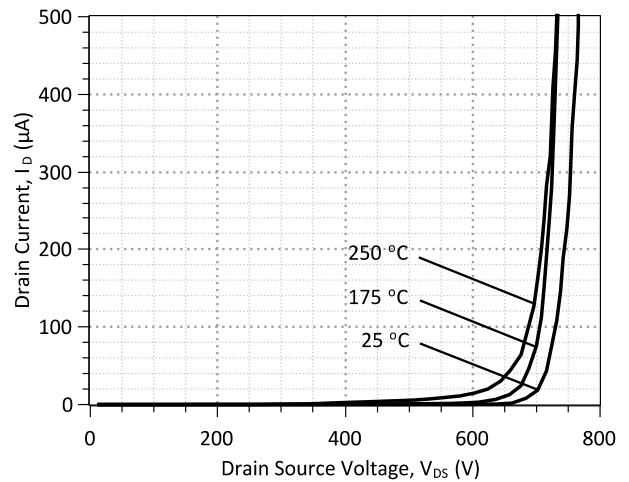


Figure 6: Typical Blocking Characteristics

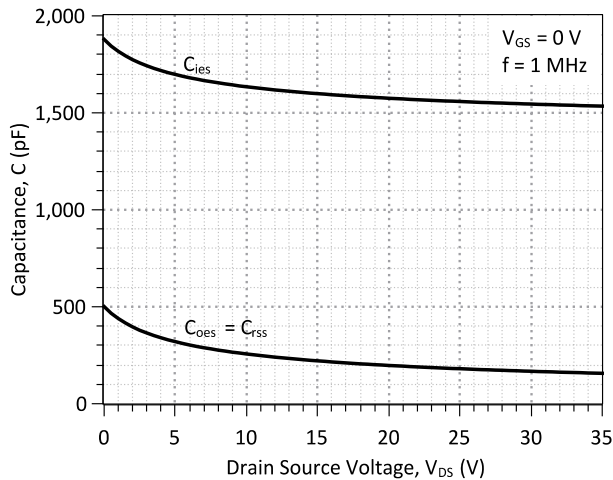


Figure 7: Typical Capacitance vs Drain-Source Voltage

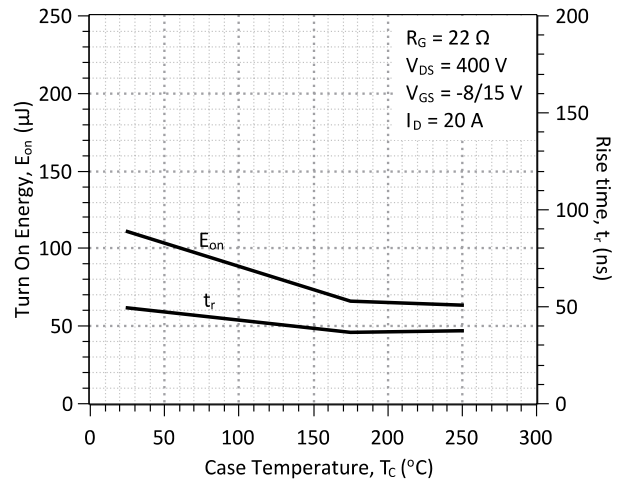


Figure 8: Typical Turn On Losses and Switching Times vs. Temperature

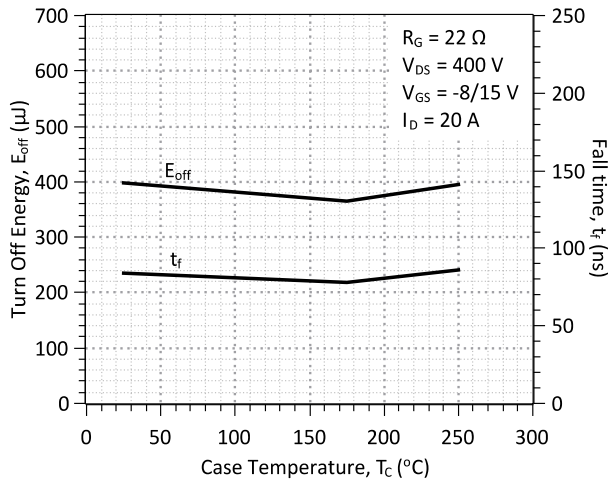


Figure 9: Typical Turn Off Energy Losses and Switching Times vs. Temperature

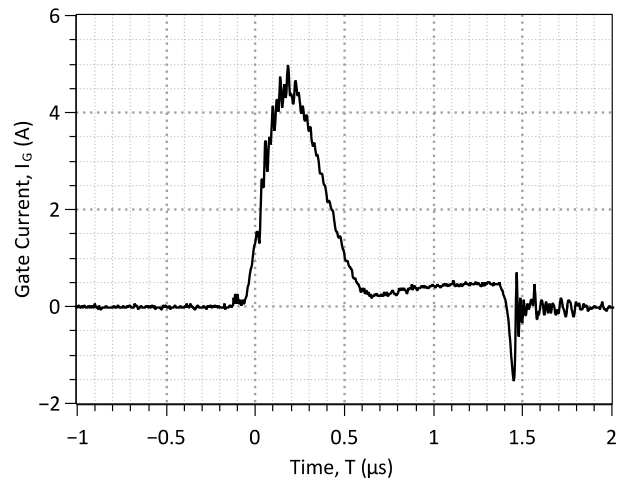
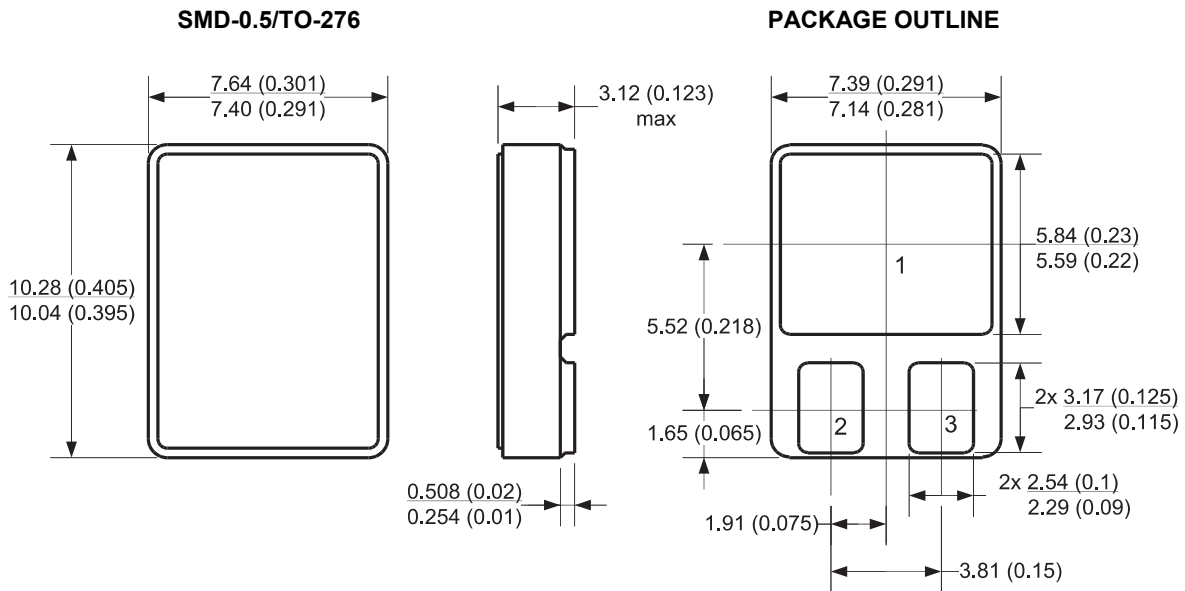


Figure 10: Typical Gate-Source Switching Waveforms

Package Dimensions:



NOTE

1. CONTROLLED DIMENSION IS INCH. DIMENSION IN BRACKET IS MILLIMETER.
2. DIMENSIONS DO NOT INCLUDE END FLASH, MOLD FLASH, MATERIAL PROTRUSIONS

Revision History

Date	Revision	Comments	Supersedes
2012/08/24	0	Initial release	

Published by

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

GeneSiC Semiconductor, Inc. reserves right to make changes to the product specifications and data in this document without notice.

GeneSiC disclaims all and any warranty and liability arising out of use or application of any product. No license, express or implied to any intellectual property rights is granted by this document.

Unless otherwise expressly indicated, GeneSiC products are not designed, tested or authorized for use in life-saving, medical, aircraft navigation, communication, air traffic control and weapons systems, nor in applications where their failure may result in death, personal injury and/or property damage.