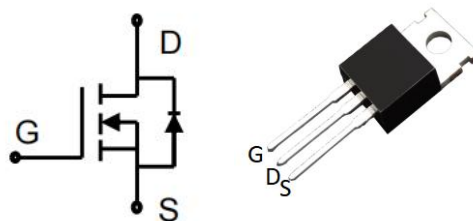


N-Channel SGT MOSFET 85V/150A

Parameter	Value	Unit
V _{DSS}	85	V
R _{DS(on)}	3.9	mΩ
I _D	150	A



TO-220

FEATURES

- Ultra-Low R_{DS(on)}
- Low gate charge (typ. Q_g=62nC)
- 100% UIS tested

APPLICATIONS

- Motor Driving in Power Tool, E-vehicle, Robotics
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Power Management in Telecom., Industrial Automation

MAXIMUM RATED VALUES(at TC=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	85	V
Gate-Source Voltage	V _{GS}	±20	V
Continue Drain Current	I _D	150	A
Pulsed Drain Current (Note1)	I _{DM}	515	A
Power Dissipation	P _D	192	W
Single Pulse Avalanche Energy (Note1)	E _{AS}	434	mJ
Operating Temperature Range	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R _{θJC}	0.65	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	45	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

ELECTRICAL CHARACTERISTICS (at T_J = 25°C unless otherwise specified)

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	BV _{DSS}	85	-	-	V
Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0 V	I _{DSS}	-	-	1	μA
Gate Leakage Current	V _{GS} = ± 20V, V _{DS} =0V	I _{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	V _{GS(th)}	2	-	4	V
Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	R _{DS(on)}	-	3.9	5	mΩ

Forward Transconductance	VDS=5V, ID=20A	gFS	-	43	-	S
Input Capacitance	VDS=40V, VGS=0V, f=1MHz	Ciss	-	4083	-	pF
Output Capacitance		Coss	-	1313	-	pF
Reverse Transfer Capacitance		Crss	-	42	-	pF
Turn-on Delay Time(Note2)	VGS=10V, VDS=40V RL=2.0, RGEN=3	td(ON)	-	18.9	-	ns
Rise Time(Note2)		tr	-	28	-	ns
Turn-Off Delay Time(Note2)		td(OFF)	-	38	-	ns
Fall Time(Note2)		tf	-	13.1	-	ns
Total Gate Charge(Note2)	VDS=40V, VGS=10V, ID=20A	QG	-	62	-	nC
Gate to Source Charge(Note2)		QGS	-	21	-	nC
Gate to Drain Charge(Note2)		QGD	-	13.8	-	nC
Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	BVDSS	85	-	-	V

SOURCE-DRAIN DIODE CHARACTERISTICS (at Ta=25°C unless otherwise specified)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		IS	-	-	150	A
Maximun Body-Diode Pulsed Current(Note2)		ISM	-	-	515	A
Drain-Source Diode Forward Voltage	VGS=0V, IS=1A, TJ=25°C	VSD	-	-	1	V
Reverse Recovery Time	IS=IF, ISD=20A, VGS=0 V, dI / dt=100 A/μs(Note3)	trr	-	57	-	ns
Reverse Recovery Charge		Qrr	-	85	-	nC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

CHARACTERISTICS DIAGRAMS

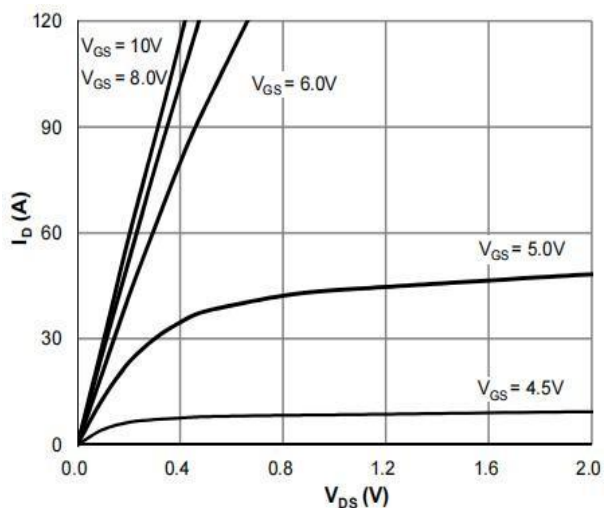


Figure 1: Saturation Characteristics

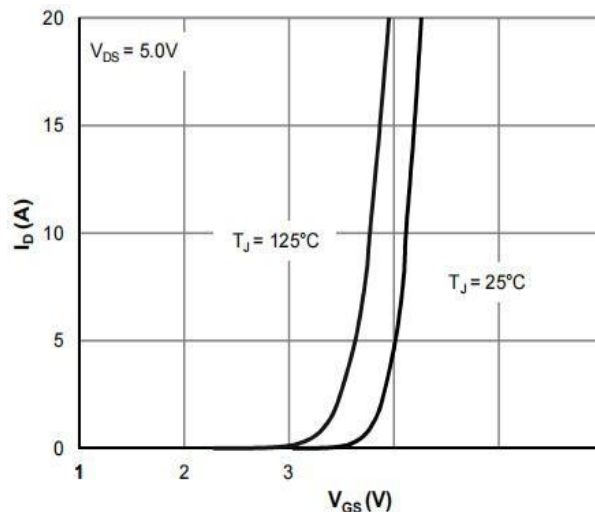


Figure 2: Transfer Characteristics

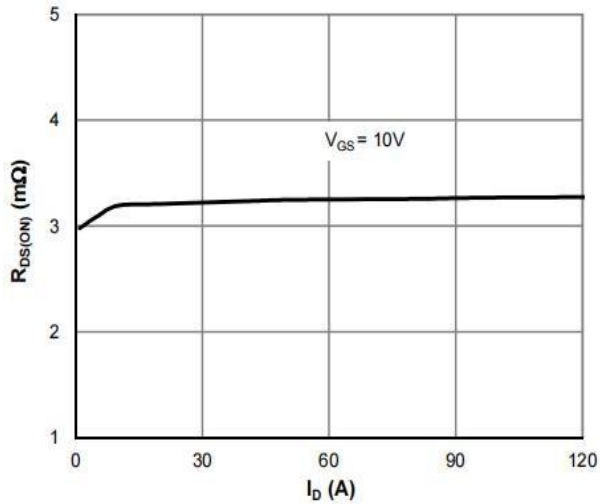


Figure 3: $R_{DS(ON)}$ vs. Drain Current

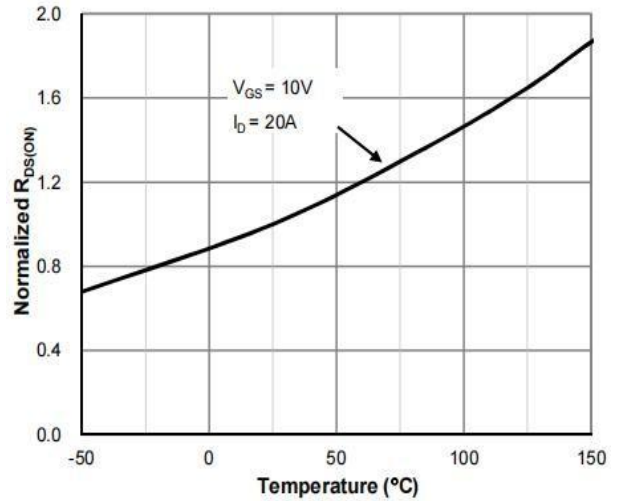


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

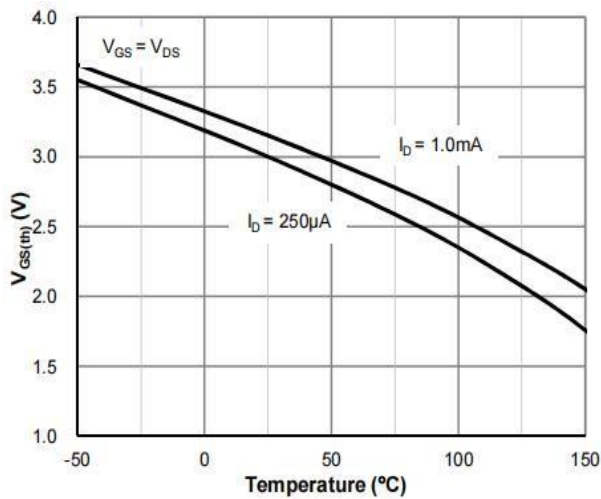


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

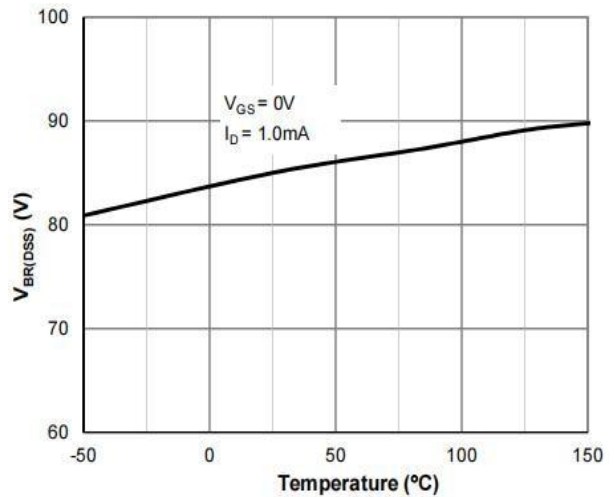


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

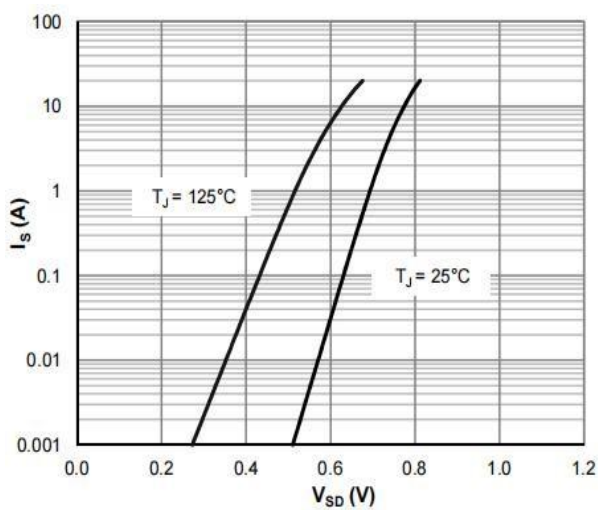


Figure 7: Body-Diode Characteristics

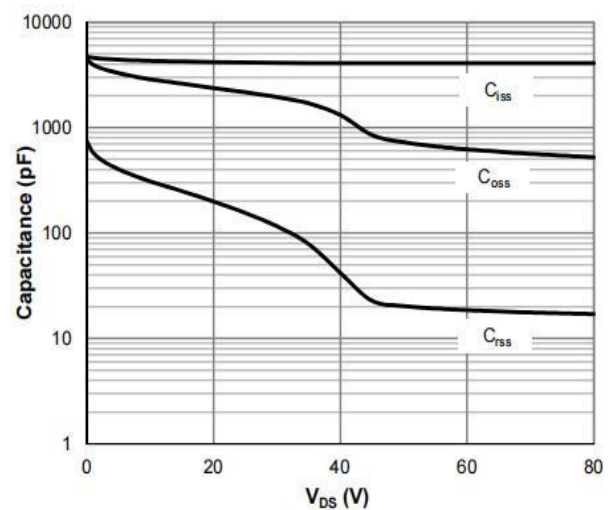


Figure 8: Capacitance Characteristics

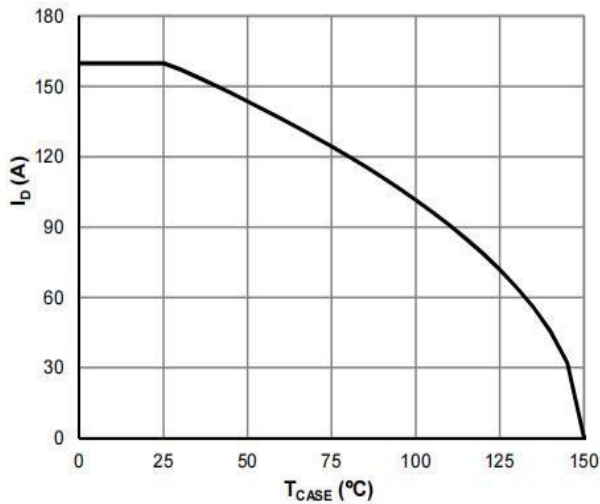


Figure 9: Current De-rating

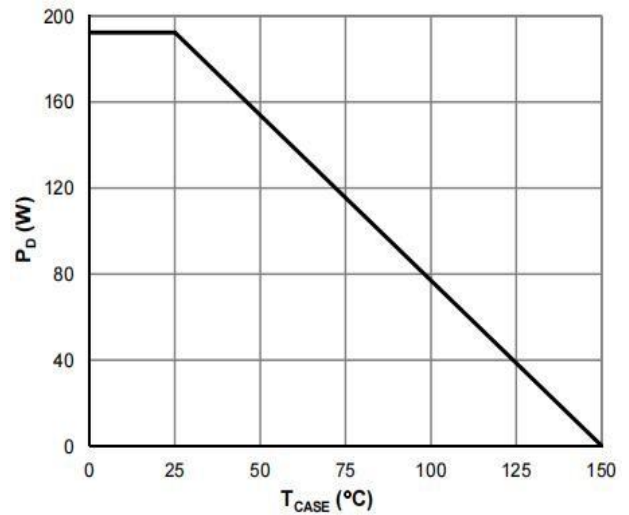


Figure 10: Power De-rating

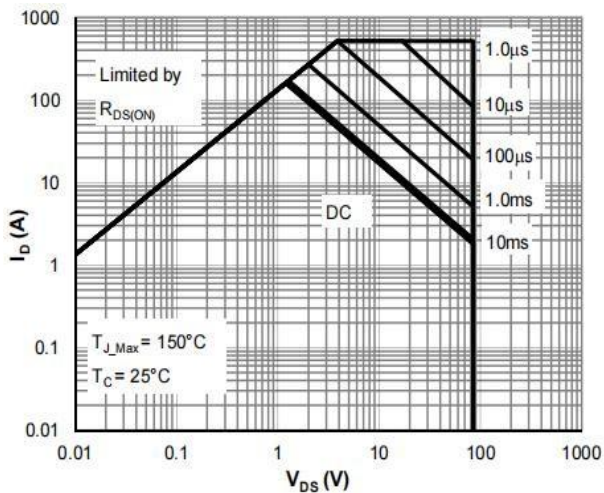


Figure 11: Maximum Safe Operating Area

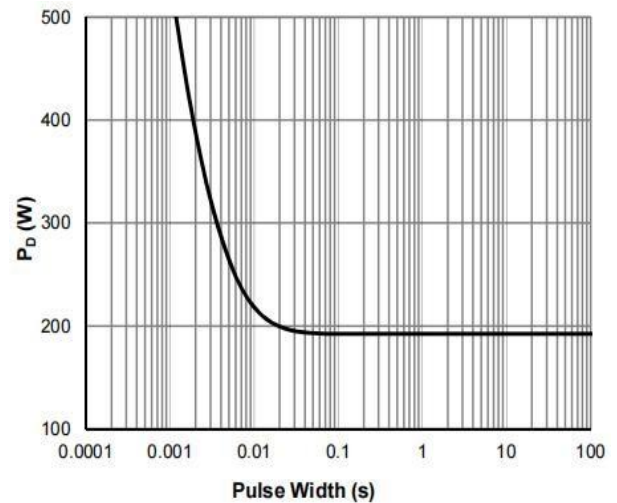
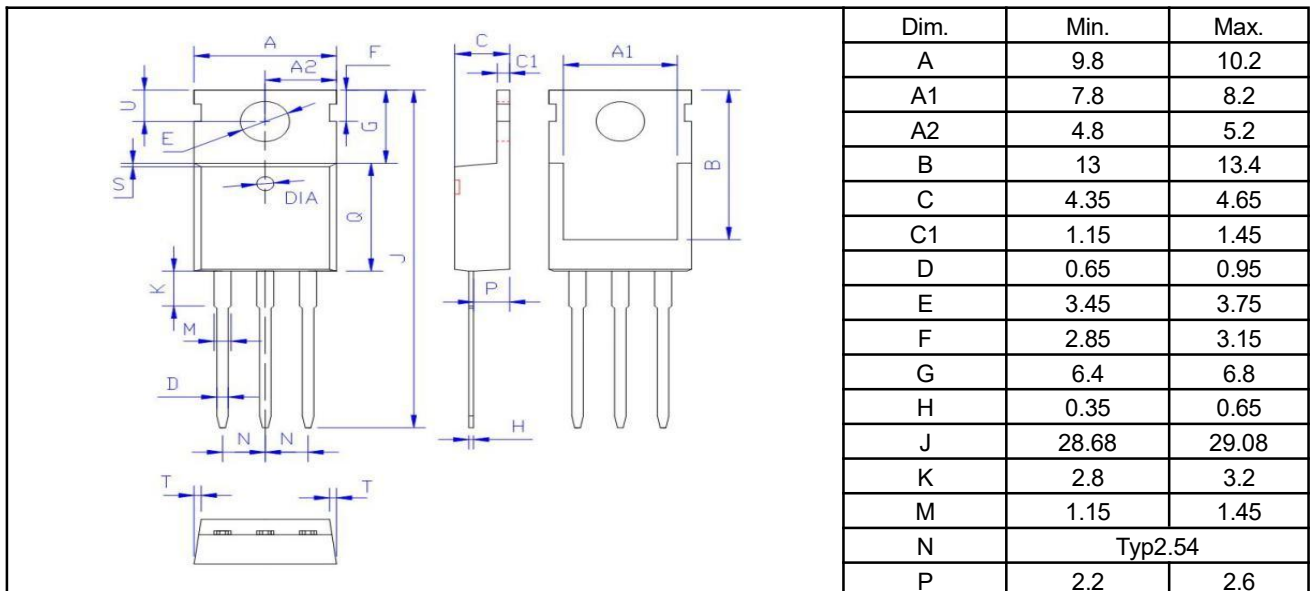


Figure 12: Single Pulse Power Rating, Junction-to-Case

PACKAGE OUTLINE



	Q	9	9.4
	S	0.15	0.35
	T	0.15	0.35
	U	2.65	2.95
	DIA	1.5±0.1	Deep MAX0.5
	All Dimensions in millimeter		

***Important Usage Information and Disclaimer**

The specifications of Zhuhai Hypersemi Co., Ltd. products are not guarantees of product characteristics. They reflect typical performance expected in standard applications, which may vary with specific uses. Users must conduct prior testing for their applications and make necessary adjustments.

Users are responsible for the safety of applications utilizing our products and must implement adequate safety measures to prevent physical injury, fire, or other risks in case of product failure. It is the user's duty to ensure that application designs comply with all applicable laws and standards. Our products must not be used in any applications where a product failure could reasonably result in personal injury, unless specifically authorized in a signed document by Zhuhai Hypersemi Co., Ltd.

No representations or warranties are made regarding the accuracy or completeness of this information, including any claims of non-infringement of third-party intellectual property rights. Zhuhai Hypersemi Co., Ltd. assumes no liability for any applications or uses of its products and does not grant any licenses to its intellectual property rights or those of others. We also make no claims regarding non-infringement of third-party intellectual property rights that may arise from applications.

Due to technical requirements, our products may contain hazardous substances. For details, please contact your nearest sales office. This document replaces all previous information and may be updated. We reserve the right to make changes.