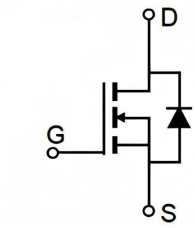
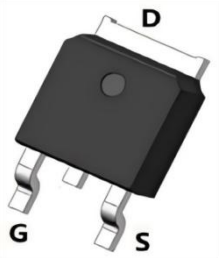
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	85	V
$R_{DS(on)}$	4.5	mΩ
I_D	120	A





TO-252

Features

- Ultra-low RDS(ON)
- Low Gate Charge
- 100% UIS and Rg Tested
- Pb-free Lead Plating

Applications

- Motor/Body Load Control
- Load Switch
- DC-DC converters

Absolute Maximum Ratings (T_C=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	120	A
Pulsed Drain Current (Note1)	I_{DM}	465	A
Power Dissipation	P_D	208	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	500	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.6	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	°C/W

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

Electrical Characteristics(TJ=25℃,unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V,I_D=250μA	85	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=± 20V, V_{DS}=0V	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS , I_D=250μA	2	-	4	V
Drain-Source On-State Resistance (Note 3)	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	4.5	5.0	mΩ
Forward Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	31	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V, f=1MH	-	1.9	-	Ω
Input Capacitance	C_{iss}	V_{DS}=40V , V_{GS}=0V , f=1MHz	-	4010	-	pF
Output Capacitance	C_{oss}		-	1264	-	pF
Reverse Transfer Capacitance	C_{rss}		-	46	-	pF
Turn-on Delay Time(Note2)	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=40V R_L=2.0Ω , R_{GEN}=3Ω	-	17.6	-	ns
Rise Time(Note2)	t_r		-	27	-	ns
Turn-Off Delay Time(Note2)	$t_{d(OFF)}$		-	31	-	ns
Fall Time(Note2)	t_f		-	10.8	-	ns
Total Gate Charge(Note2)	Q_G	V_{DS}=40V , V_{GS}=10V , I_D=20A	-	56	-	nC
Gate to Source Charge(Note2)	Q_{GS}		-	18.3	-	nC
Gate to Drain Charge(Note2)	Q_{GD}		-	15	-	nC
Maximum Body-Diode Continuous Current	I_S		-	-	120	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	-	0.7	1.0	V
Reverse Recovery Time(Note2)	t_{rr}	T_J=25℃, I_F=20A	-	58	-	ns
Reverse Recovery Charge(Note2)	Q_{rr}	di/dt =100A/μs	-	95	-	nC

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

Typical Characteristics

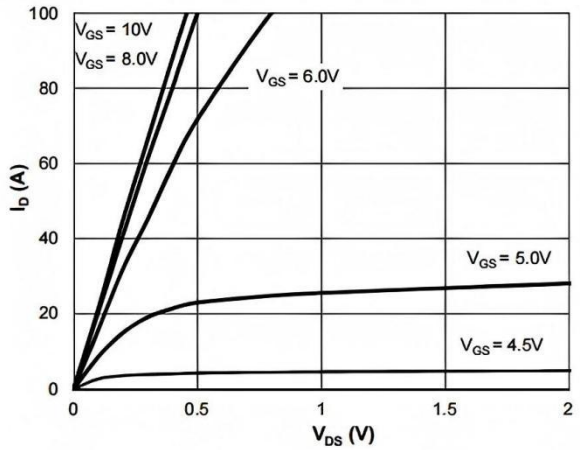


Figure 1: Saturation Characteristics

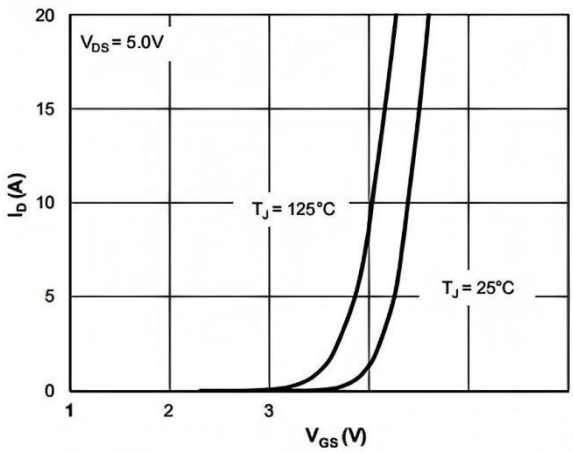


Figure 2: Transfer Characteristics

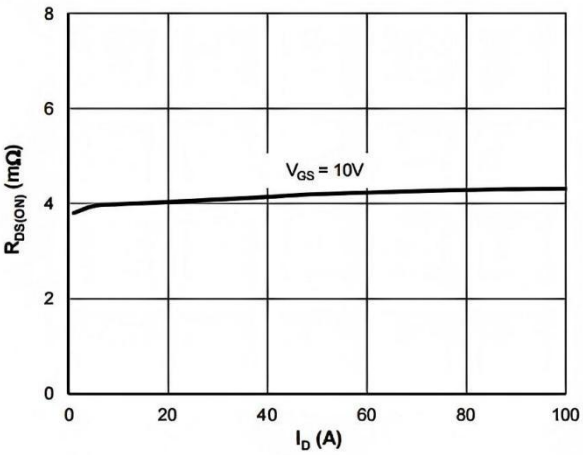


Figure 3: $R_{DS(ON)}$ vs. Drain Current

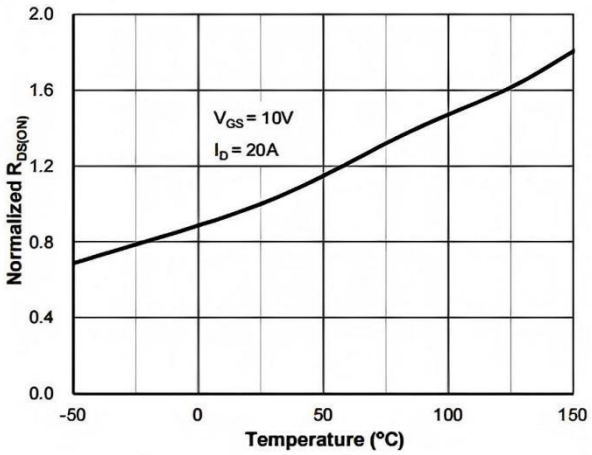


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

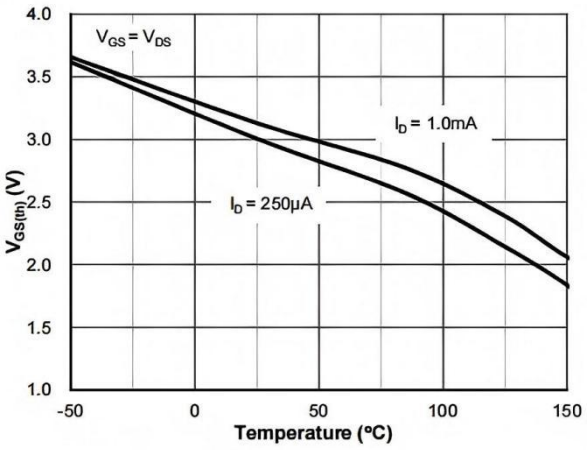


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

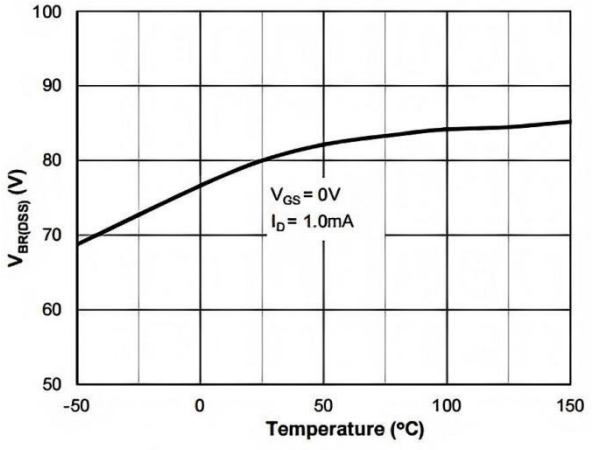


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

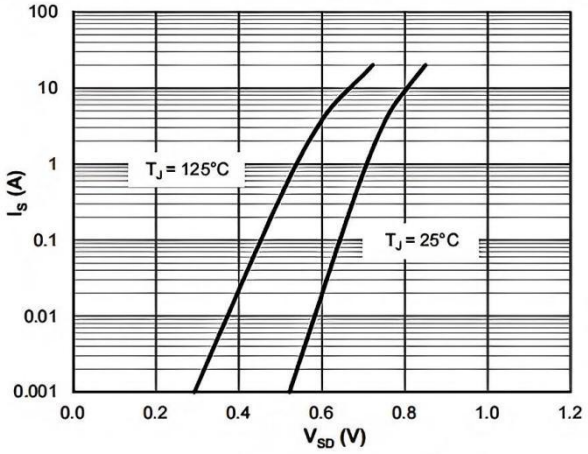


Figure 7: Body-Diode Characteristics

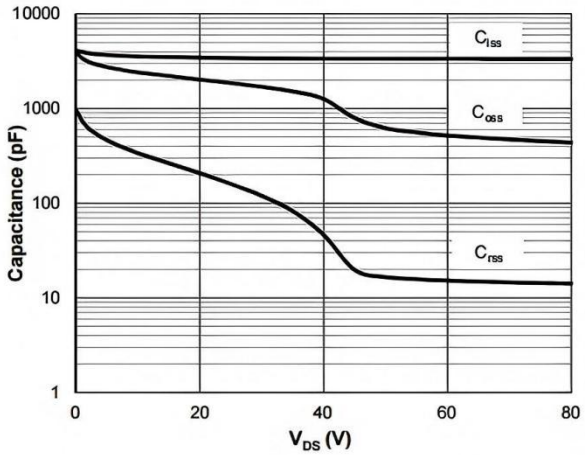


Figure 8: Capacitance Characteristics

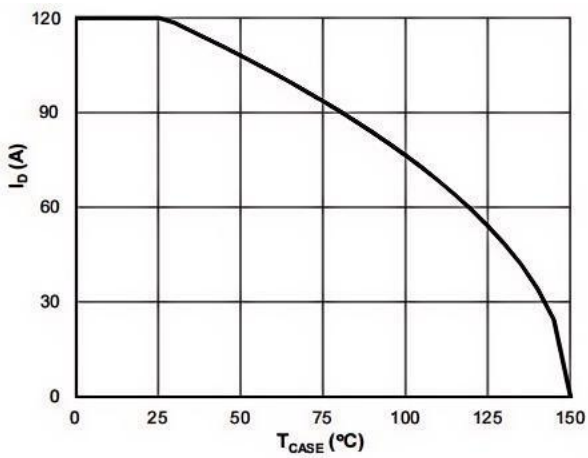


Figure 9: Current De-rating

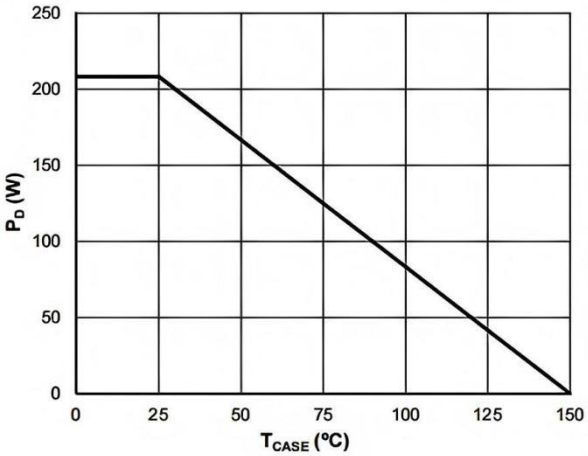


Figure 10: Power De-rating

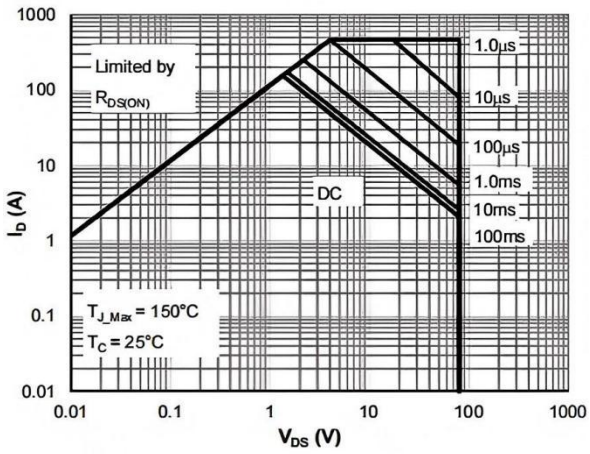


Figure 11: Maximum Safe Operating Area

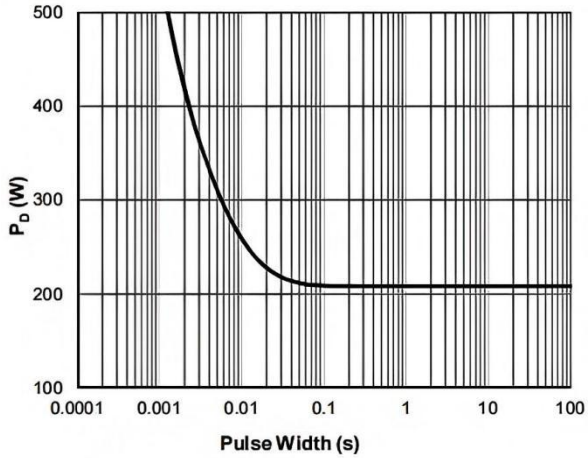
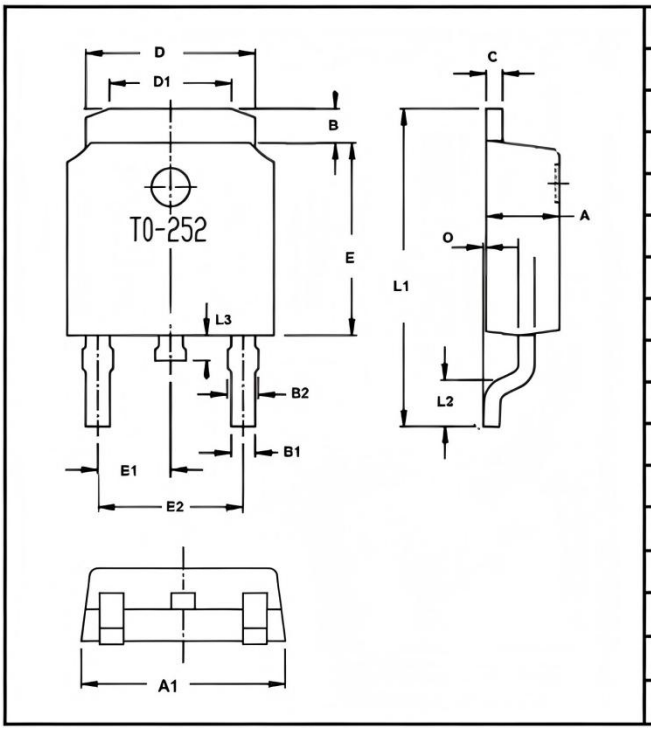


Figure 12: Single Pulse Power Rating, Junction-to-Case

Package Outlines

TO-252



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.95	1.55
B1	0.6	0.8
B2	0.75	0.95
C	Typ0.5	
D	5.3	5.5
D1	3.65	4.05
E	5.8	6.4
E1	Typ2.3	
E2	Typ4.6	
O	0	0.15
L1	9	11
L2	Typ1.5	
L3	0.7	1.0
Dimensions in mm		

***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.