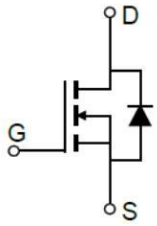
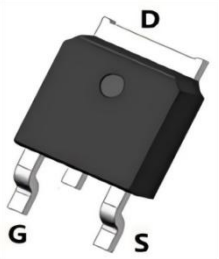
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	60	V
$R_{DS(on)}$	60	mΩ
I_D	10	A





TO-252

Features

- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Applications

- Load Switch
- PWM Application
- Power management

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current @T_C=25℃	I_D	10	A
Continuous Drain Current @T_C=100℃	I_D	8	A
Pulsed Drain Current [1]	I_{DM}	18	A
Total Power Dissipation [2] @T_A=25℃	P_D	1.2	W
Operating and Storage Temperature Range	$T_{STG;}$ T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient [3]	$R_{\theta JA}$	85	105	℃/W

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	--	--	1.0	μA
		V_{DS}=60V,V_{GS}=0V,T_J=150℃	--	--	100	
Gate to Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}= ±20V	--	--	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	0.9	1.35	2	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=3A	--	60	82	mΩ
		V_{GS}=4.5V, I_D=3A	--	68	92	
Gate resistance	R_g	f=1MHz, Open drain	--	2	--	Ω
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V f=1MHz	--	500	--	pF
Output Capacitance	C_{oss}		--	28	--	pF
Reverse Transfer Capacitance	C_{rss}		--	22	--	pF
Total Gate Charge	Q_g	V_{DS}=30V, I_D=3A V_{GS}=10V	--	10	--	nC
Gate-Source Charge	Q_{gs}		--	1.7	--	nC
Gate-Drain(“Miller”) Charge	Q_{gd}		--	2.1	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=30V, V_{GS}=10V R_G=3Ω, R_L=20Ω	--	3.6	--	ns
Turn-on Rise Time	t_r		--	17.6	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	13	--	ns
Turn-off Fall Time	t_f		--	23	--	ns

Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	--	--	10	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=3A , T_J=25℃	--	0.85	1.2	V
Reverse Recovery Charge	Q_{rr}	I_F=3A, di/dt=100A/us	--	7	--	nC
Reverse Recovery Time	T_{rr}		--	33	--	nS

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. P_d is based on max. junction temperature, using junction-case thermal resistance.
3. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with T_A =25℃. The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

Typical Characteristics

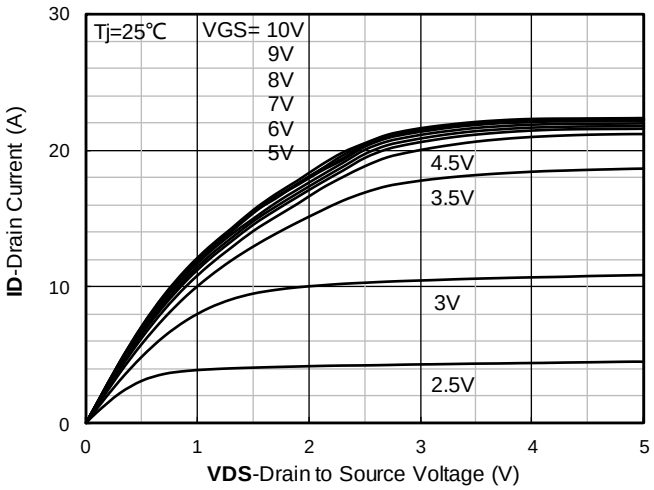


Figure 1. Output Characteristics

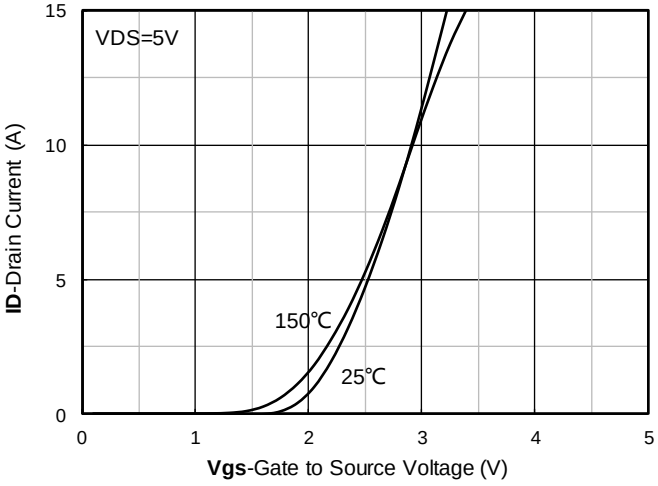


Figure 2. Transfer Characteristics

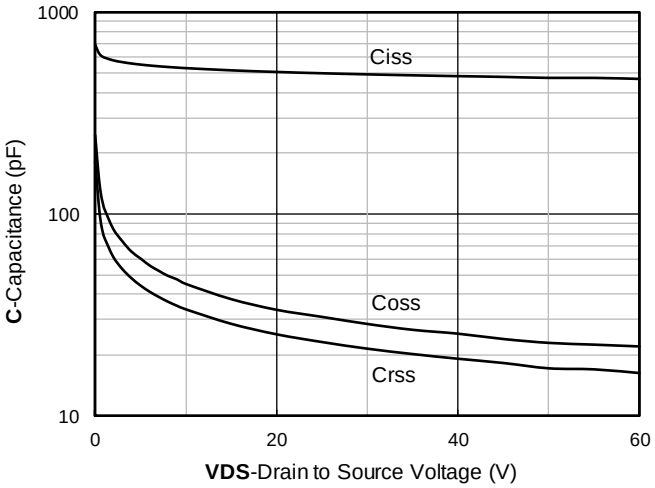


Figure 3. Capacitance Characteristics

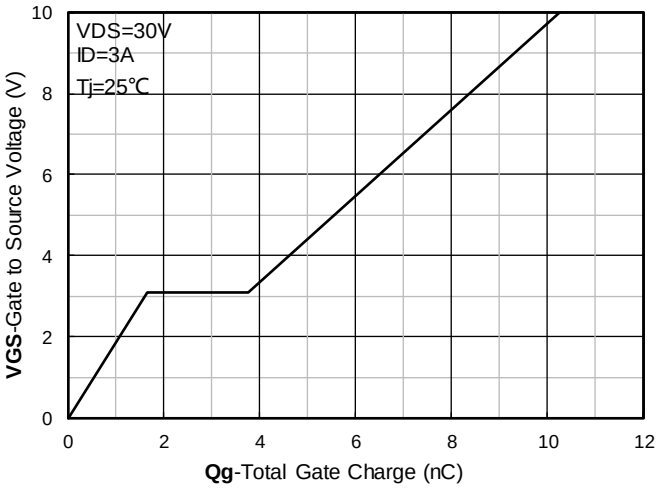


Figure 4. Gate Charge

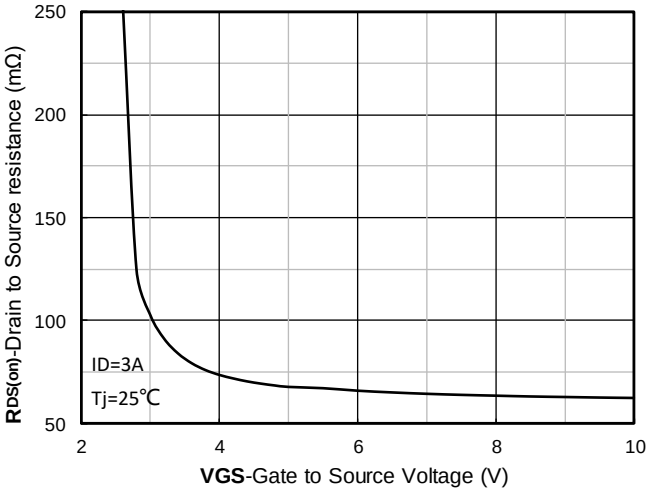


Figure 5. On-Resistance vs Gate to Source Voltage

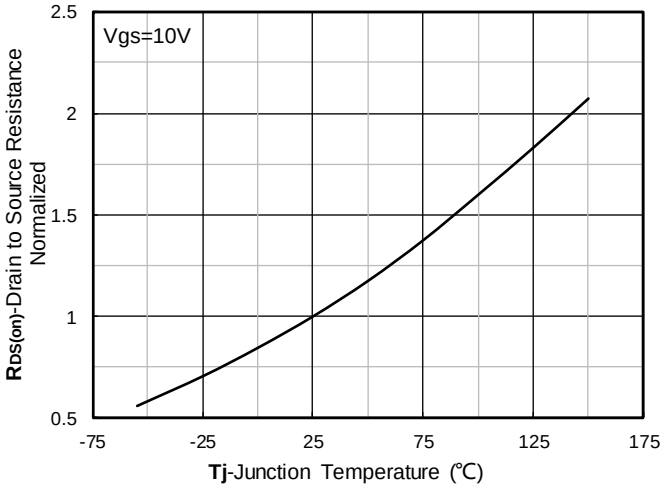


Figure 6. Normalized On-Resistance

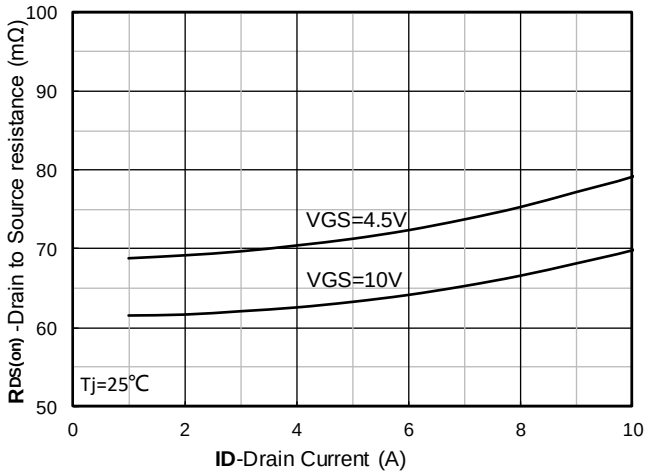


Figure 7. $R_{DS(on)}$ VS Drain Current

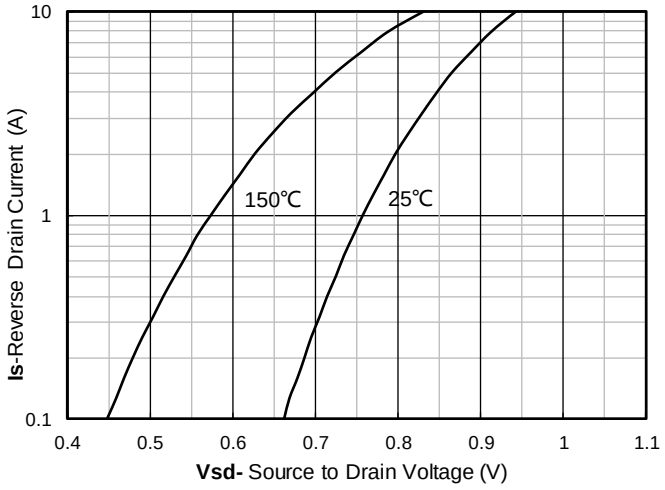


Figure 8. Forward characteristics of reverse diode

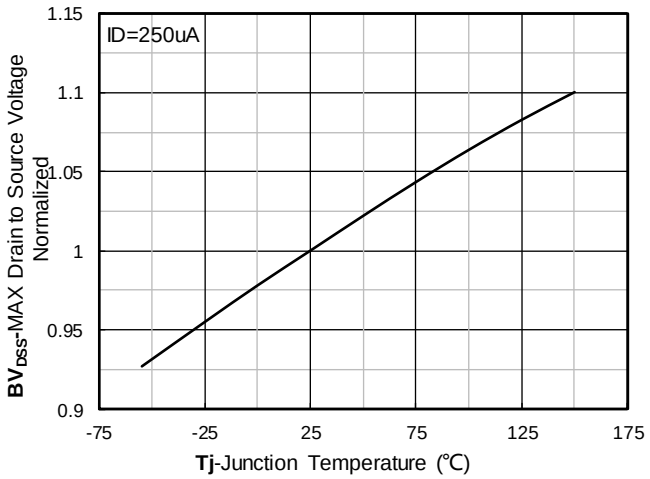


Figure 9. Normalized breakdown voltage

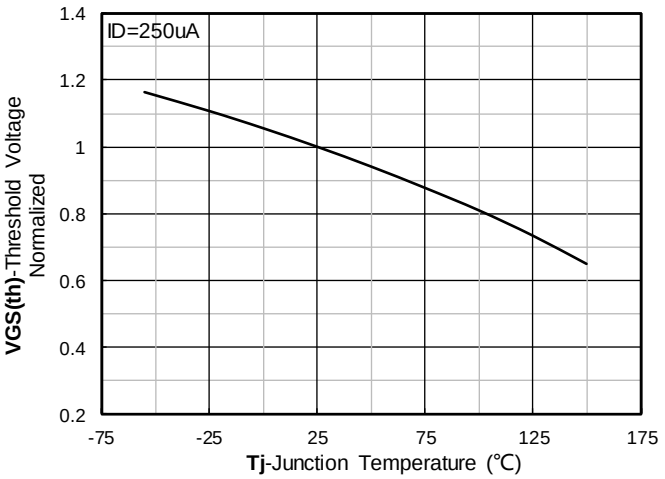


Figure 10. Normalized Threshold voltage

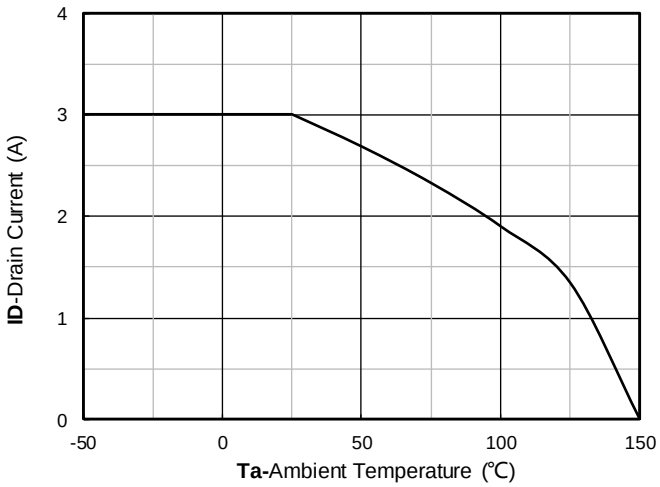


Figure 11. Current dissipation

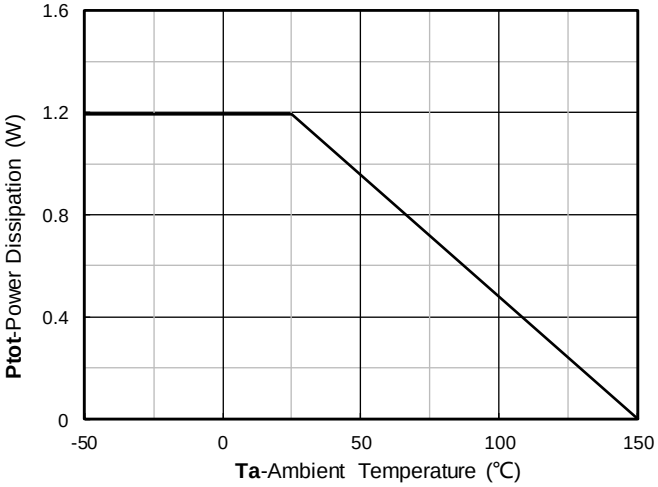


Figure 12. Power dissipation

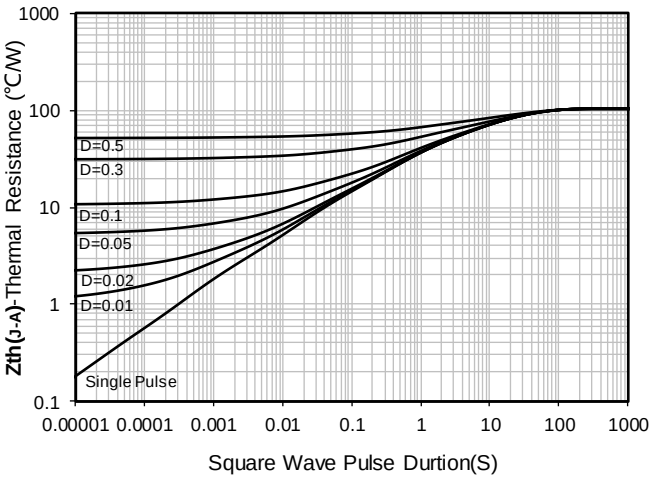


Figure 13. Maximum Transient Thermal Impedance

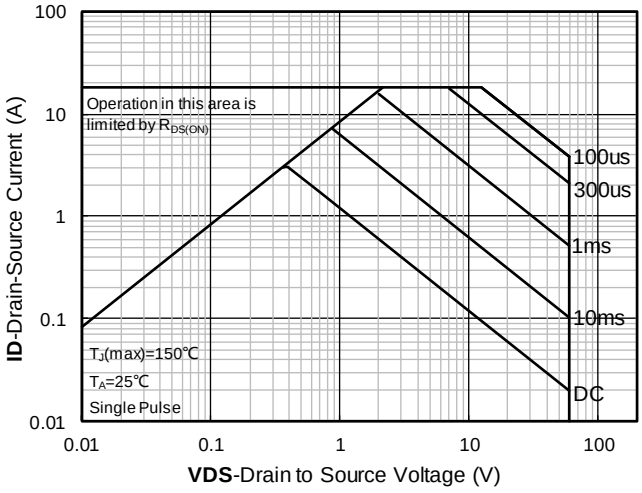
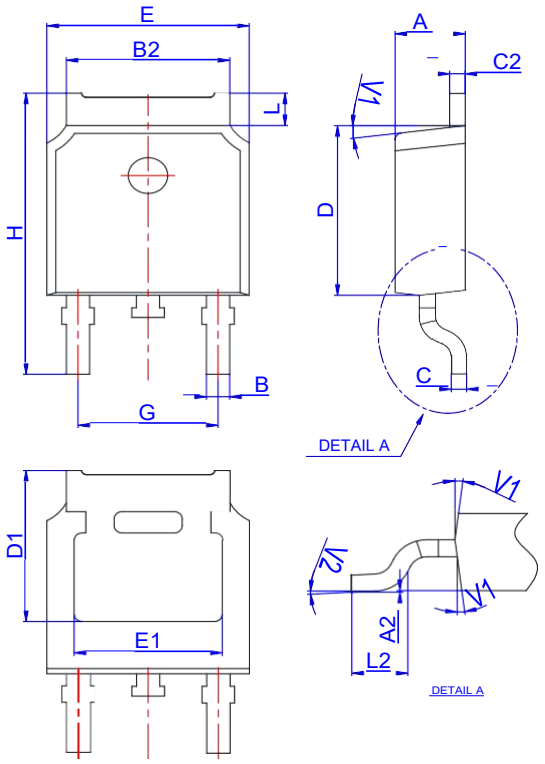


Figure 14. Safe Operation Area

Package Outlines Dimensions (Units: mm)

TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

***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.