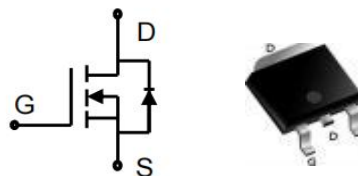


N-Channel Trench Power MOSFET 100V/40A

Parameter	Value	Unit
V _{DS}	100	V
R _{DS(on)}	23	mΩ
I _D	40	A



TO-252

FEATURES

- Advanced Trench Technology
- Provide Excellent R_{DS(ON)} and Low Gate
- Lead free product is acquired

APPLICATIONS

- Load Switch
- PWM Application
- Power management

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continue Drain Current	I _D	40	A
Pulsed Drain Current (Note1)	I _{DM}	160	A
Power Dissipation	P _D	88	W
Single Pulse Avalanche Energy (Note5)	E _{AS}	56	mJ
Operating Temperature Range	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	R _{θJC}	1.7	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	62	°C/W

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}	100	-	-	V
Drain-Source Leakage Current	V _{DS} = 100V, V _{GS} = 0V	I _{DSS}	-	-	1	μA
	V _{DS} = 100V, T _c = 125°C		-	-	100	μA
Gate Leakage Current	V _{GS} = ± 20V, V _{DS} = 0V	I _{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	V _{GS(th)}	1	-	2	V

Drain-Source On-State Resistance (Not	$V_{GS} = 10V, I_D = 20A$	$R_{DS(on)}$	-	23	29	mΩ
	$V_{GS} = 4.5V, I_D = 10A$	$R_{DS(on)}$		24.2	30	mΩ
Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V,$ $f = 1MHz$	C_{iss}	-	2858	-	pF
Output Capacitance		C_{oss}	-	127	-	pF
Reverse Transfer Capacitance		C_{rss}	-	100	-	pF
Turn-on Delay Time	$V_{DS}=30V, I_D=15A$ $V_{GS}=10V, R_G=1.8\Omega$	$t_d(ON)$	-	11	-	ns
Rise Time		t_r	-	45	-	ns
Turn-Off Delay Time		$t_d(OFF)$	-	67	-	ns
Fall Time		t_f	-	48	-	ns
Total Gate Charge	$V_{DS}=30V, I_D=15A, V_{GS}=10V$	Q_G	-	66	-	nC
Gate to Source Charge		Q_{GS}	-	10	-	nC
Gate to Drain Charge		Q_{GD}	-	14	-	nC

SOURCE-DRAIN DIODE CHARACTERISTICS (at $T_J = 25^\circ C$ unless otherwise specified)

Parameter	Test Condition	Symbo	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current (Note 2)		I_S	-	-	40	A
Maximun Body-Diode Pulsed Current		ISM	-	-	160	A
Drain-Source Diode Forward Voltage(Note 3)	$I_{SD} = 20A$	VSD	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=30A,$ $V_{GS} = 0V,$	trr	-	28	-	ns
Reverse Recovery Charge	$dI / dt = 100 A/\mu s$ (Note3)	Qrr	-	40	-	μC

CHARACTERISTICS DIAGRAMS

Figure 1: Power De-rating

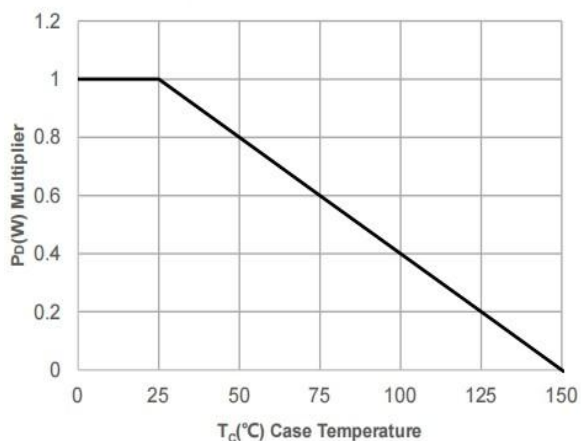


Figure 2: Current De-rating

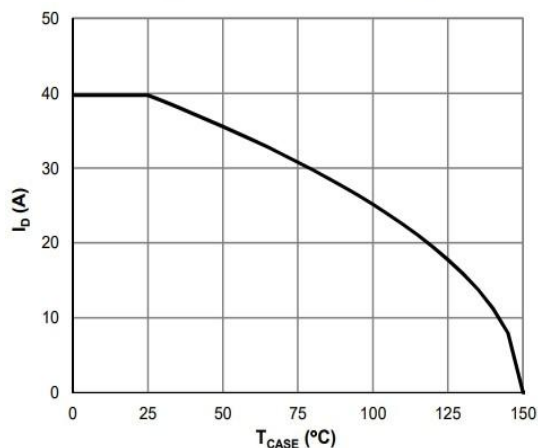


Figure 3: Normalized Maximum Transient Thermal Impedance

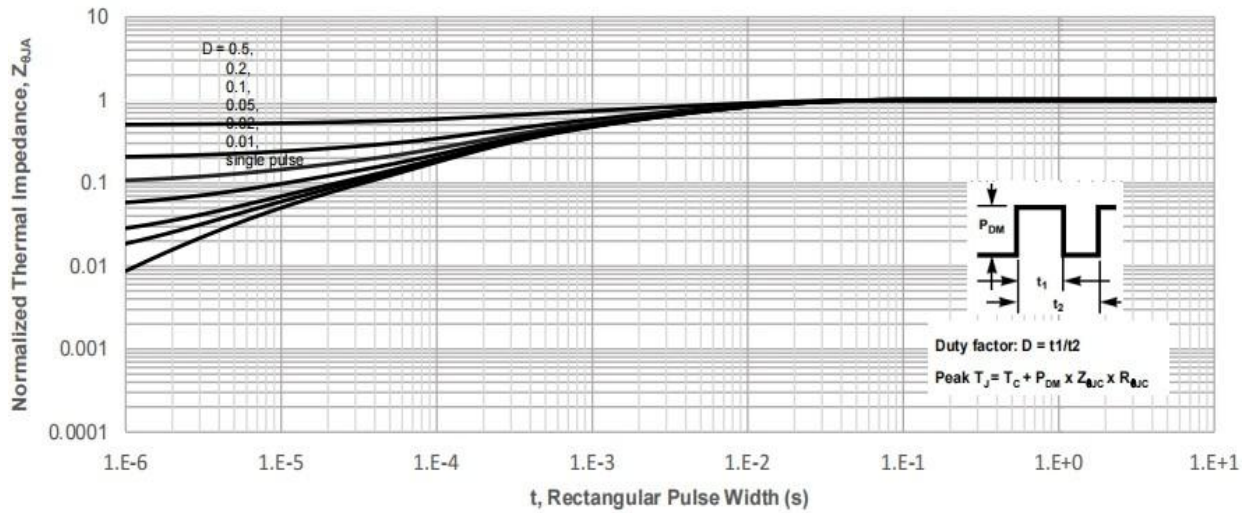


Figure 4: Peak Current Capacity

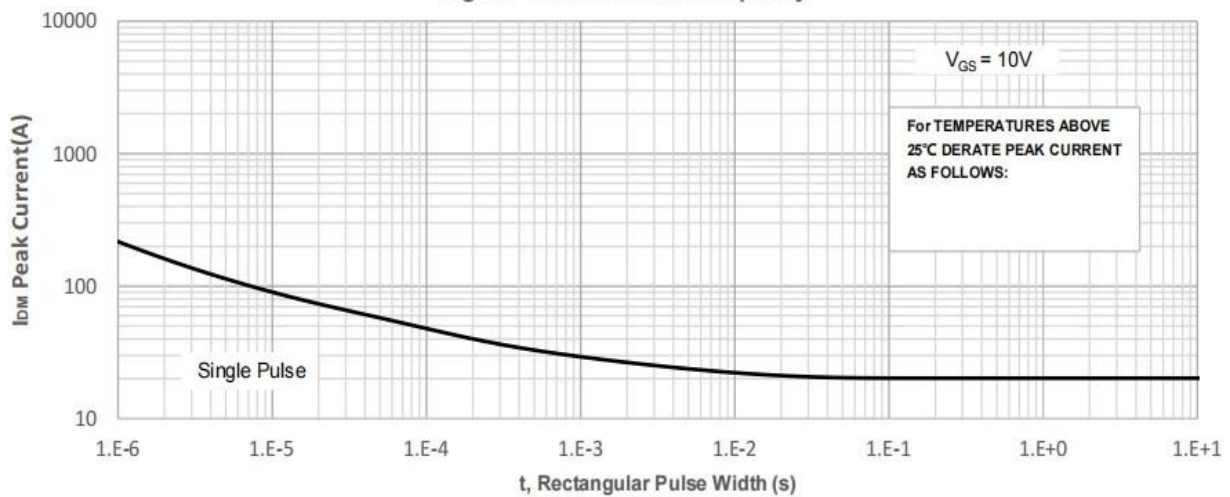


Figure 5: Output Characteristics

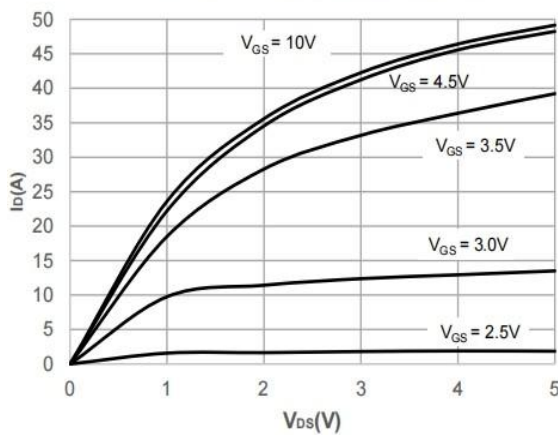


Figure 6: Typical Transfer Characteristics

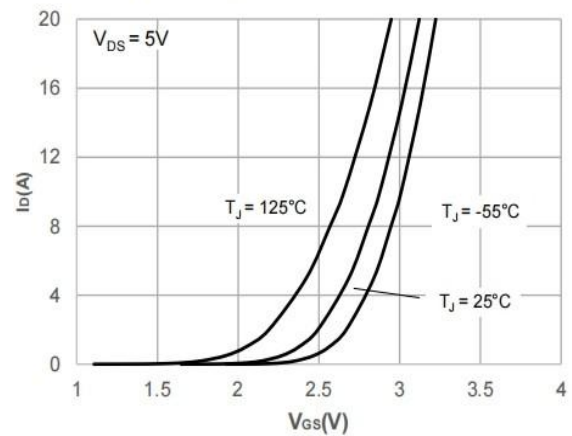


Figure 7: On-resistance vs. Drain Current

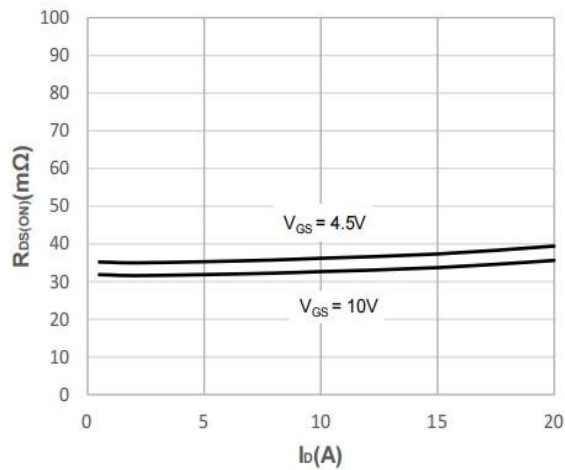


Figure 8: Body Diode Characteristics

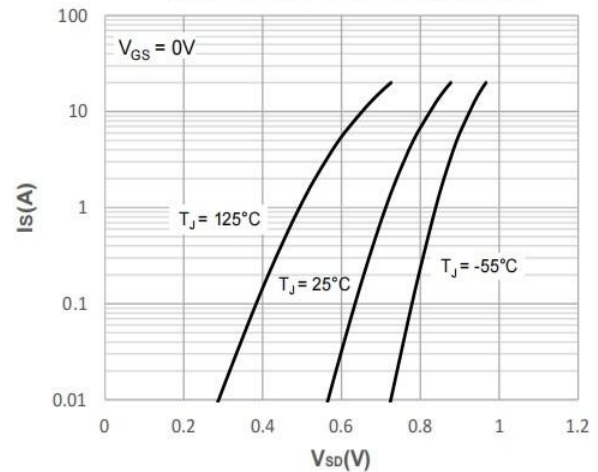


Figure 9: Gate Charge Characteristics

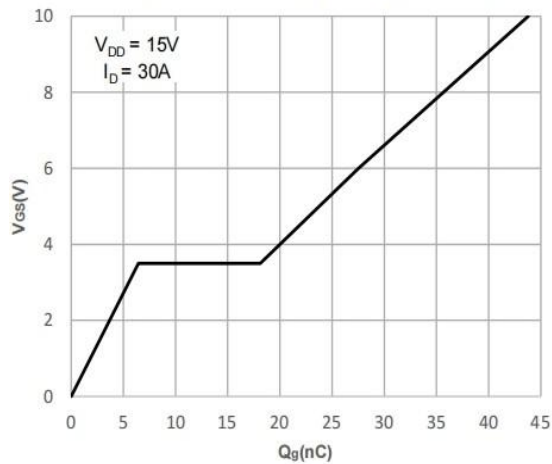


Figure 10: Capacitance Characteristics

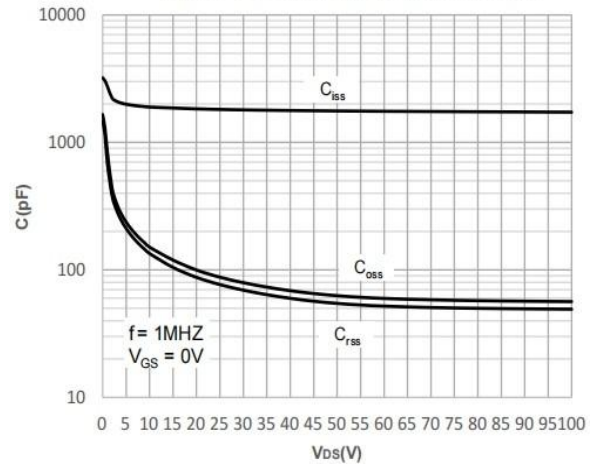


Figure 11: Normalized Breakdown voltage vs. Junction Temperature

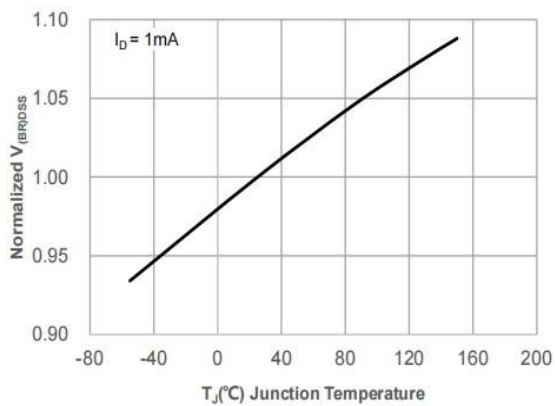


Figure 12: Normalized on Resistance vs. Junction Temperature

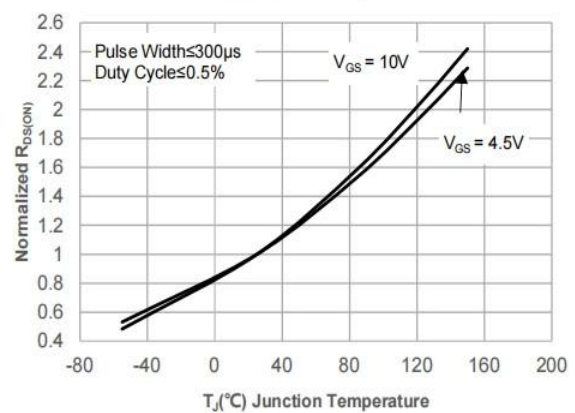


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

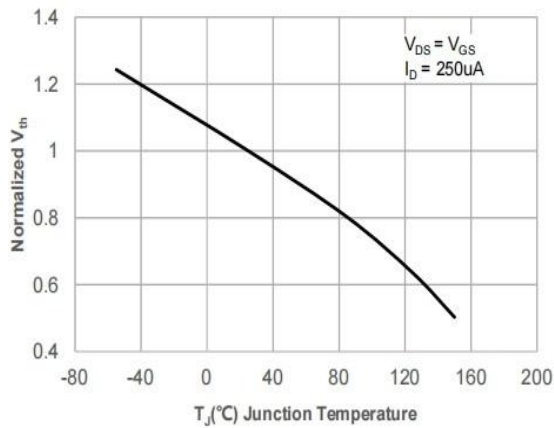


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

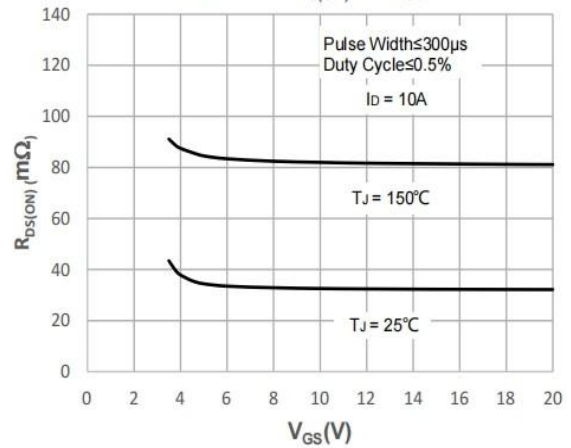
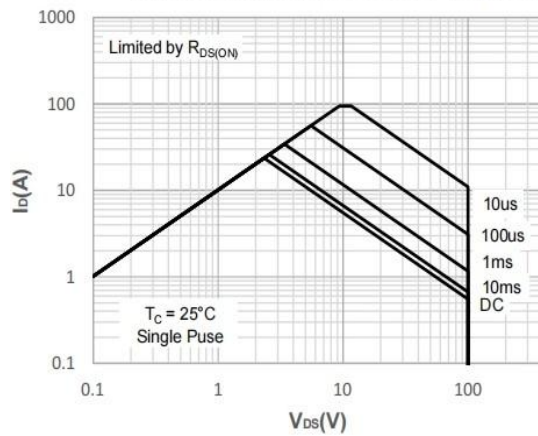
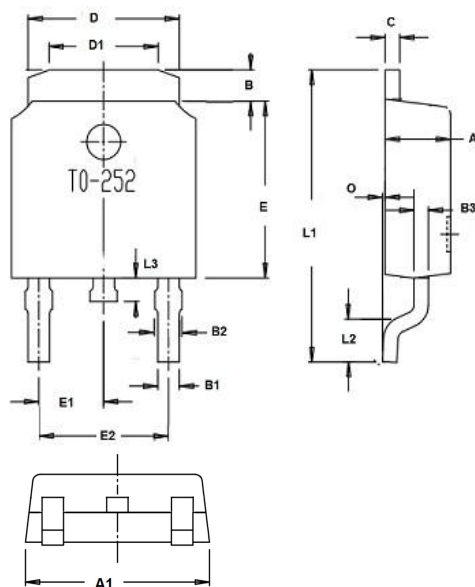


Figure 15: Maximum Safe Operating Area



PACKAGE OUTLINE



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
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.