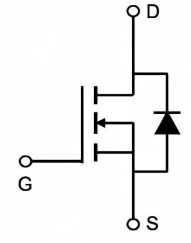
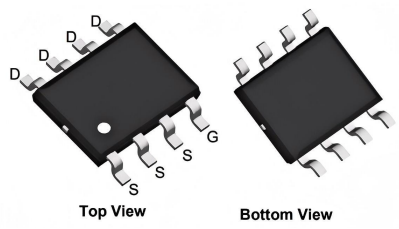
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	60	V
$R_{DS(on)}$	10	mΩ
I_D	8.2	A





SOP-8

Features

- Advanced trench cell design
- Low Thermal Resistance
- Low Gate Charge

Applications

- Motor/Body Load Control
- Load Switch
- DC-DC converters and Off-line UPS

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

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	8.2	A
	T_C=70℃		6.6	
Pulsed Drain Current [1]		I_{DM}	40	A
Avalanche Current		I_{AS}	10	A
Single Pulse Avalanche Energy [2]		E_{AS}	5	mJ
Total Power Dissipation	T_C=25℃	P_D	1.7	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance from Junction to Lead	$R_{\theta JL}$	---	30	℃/W
Thermal Resistance from Junction to Ambient [3]	$R_{\theta JA}$	---	75	℃/W

Note:
1) Pulse Test: Pulse Width ≤ 100μs, Duty Cycle ≤ 2%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$ = 150°C.
2) Limited by $T_{J(MAX)}$, starting T_J = 25°C, L = 0.1mH, R_g = 25Ω , I_D = 10A, V_{GS} = 10V.
3) Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at I_D = 250μA	BV_{DSS}	60			V
Drain-Source Leakage Current at V_{DS} = 60V	I_{DSS}			1	μA
Gate Leakage Current at V_{GS} = ±20V	I_{GSS}			± 100	nA
Gate-Source Threshold Voltage at V_{DS} = V_{GS} , I_D = 250μA	$V_{GS(th)}$	1	1.5	2.2	V
Drain-Source On-State Resistance at V_{GS} = 10V, I_D = 10A at V_{GS} = 4.5V, I_D = 10A	$R_{DS(on)}$		10 14	12 20	mΩ
DYNAMIC PARAMETERS					
Gate resistance at V_{DS} = 0V, f = 1MHz	R_g			0.8	Ω
Forward Transconductance at V_{DS} = 5V, I_D = 8.2A	g_{fs}		24		S
Input Capacitance at VGS = 0V, V_{DS} = 30V, f = 1MHz	C_{iss}		1920		pF
Output Capacitance at V_{GS} = 0V, V_{DS} = 30V, f = 1MHz	C_{oss}		155		pF
Reverse Transfer Capacitance at V_{GS} = 0V, V_{DS} = 30V, f = 1MHz	C_{rss}		116		pF
Gate charge total at V_{DS} = 30V, I_D = 8.2A, V_{GS} = 10V at V_{DS} = 30V, I_D = 8.2A, V_{GS} = 4.5V	Q_g		47.6 24.2		nC
Gate to Source Charge at V_{DS} = 30V, I_D = 8.2A, V_{GS} = 10V	Q_{gs}		6		nC
Gate to Drain Charge at V_{DS} = 30V, I_D = 8.2A, V_{GS} = 10V	Q_{gd}		14.4		nC
Turn-On Delay Time at V_{GS} = 10V, V_{DS} = 30V, R_L = 3.6Ω , R_g = 3Ω	$td_{(on)}$		8.2		ns
Turn-On Rise Time at V_{GS} = 10V, V_{DS} = 30V, R_L = 3.6Ω , R_g = 3Ω	t_r		5.5		ns
Turn-Off Delay Time at V_{GS} = 10V, V_{DS} = 30V, R_L = 3.6Ω , R_g = 3Ω	$t_{d(off)}$		29.7		ns
Turn-Off Fall Time at V_{GS} = 10V, V_{DS} = 30V, R_L = 3.6Ω , R_g = 3Ω	t_f		5.2		ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S = 1A, V_{GS} = 0V	V_{SD}			1	V
Body Diode Reverse Recover Time at I_F = 8.2A, di/dt = 100A/μs	t_{rr}		34		ns
Body Diode Reverse Recovery Charge at I_S = 24A, di/dt = 100A/μs	Q_{rr}		53		nC

Typical Characteristics

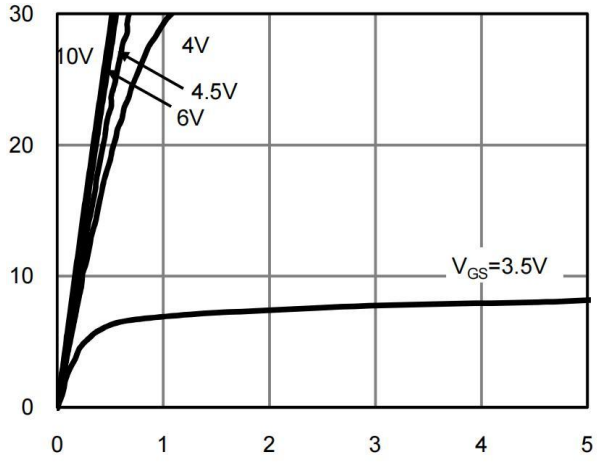


Fig 1: On-Region Characteristics

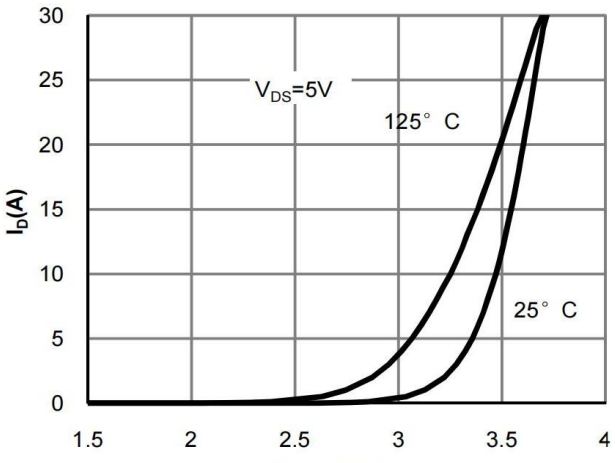


Figure 2: Transfer Characteristics

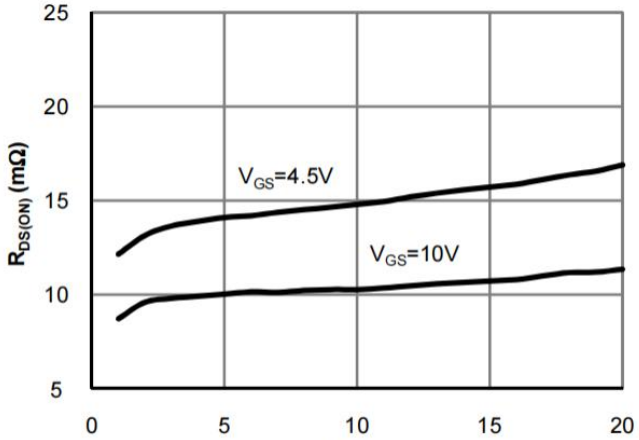


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

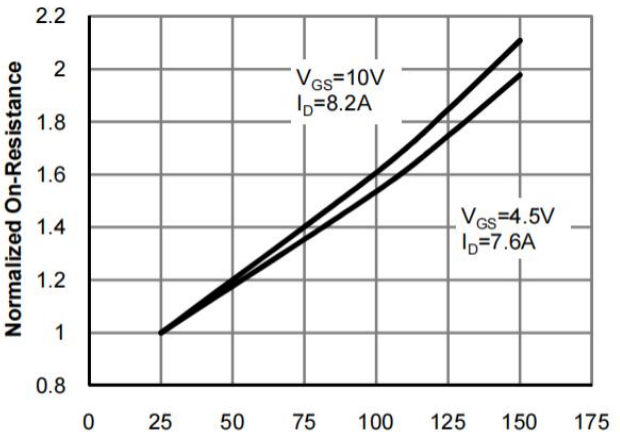


Figure 4: On-Resistance vs. Junction Temperature

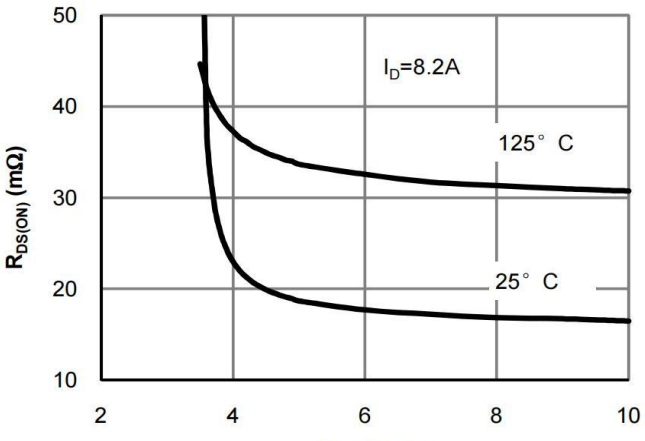


Figure 5: On-Resistance vs. Gate-Source Voltage

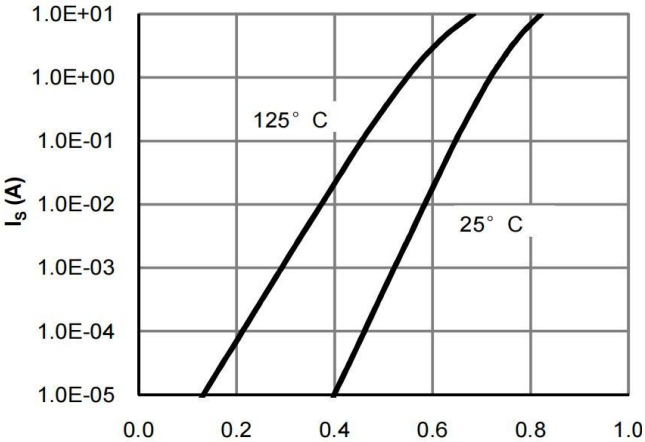


Figure 6: Body-Diode Characteristics

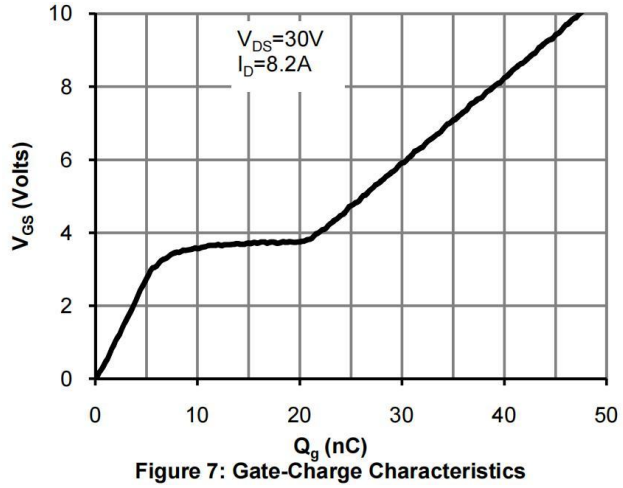


Figure 7: Gate-Charge Characteristics

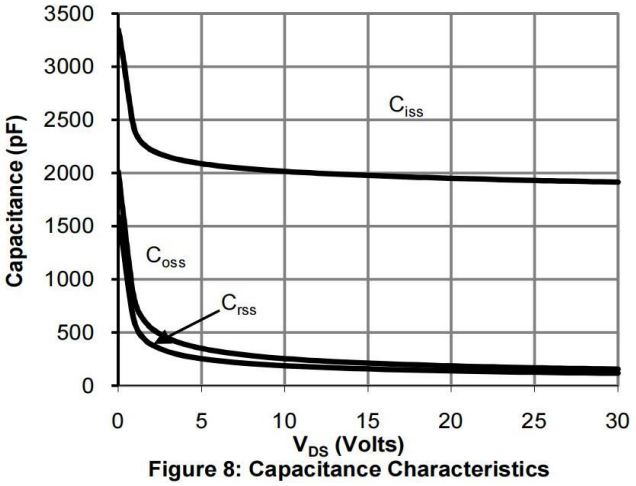


Figure 8: Capacitance Characteristics

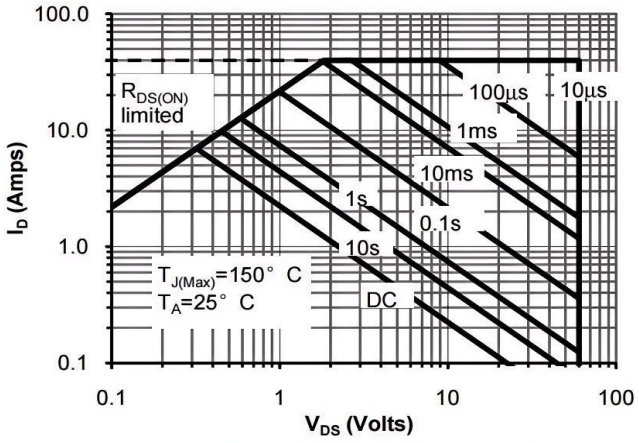


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

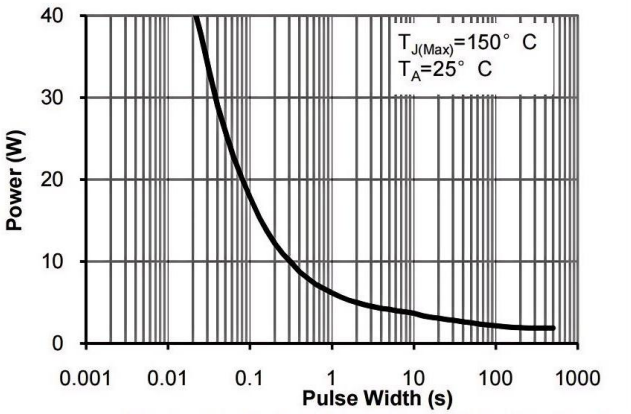


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

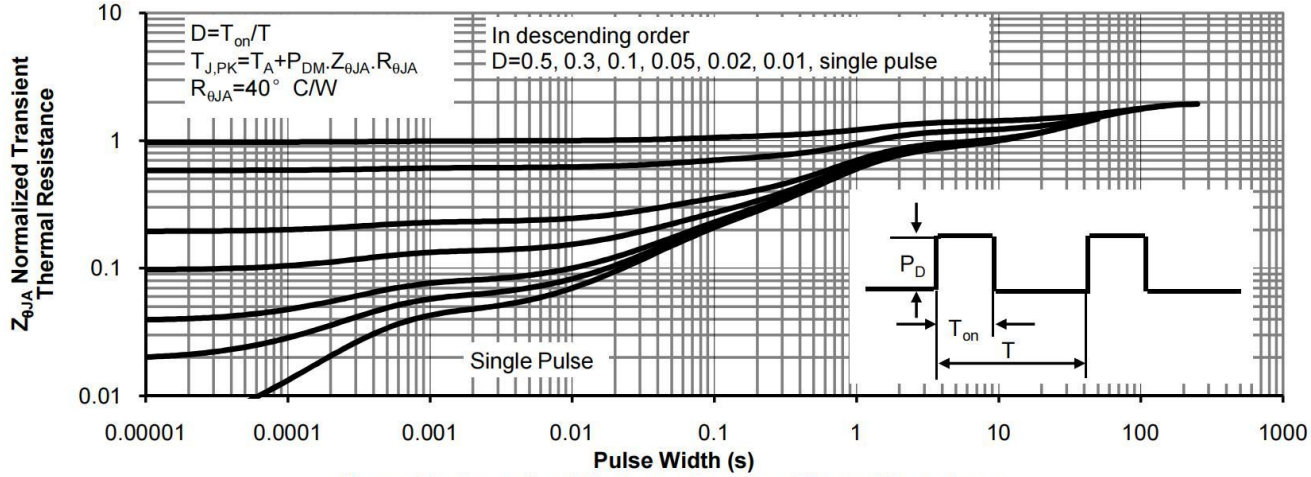
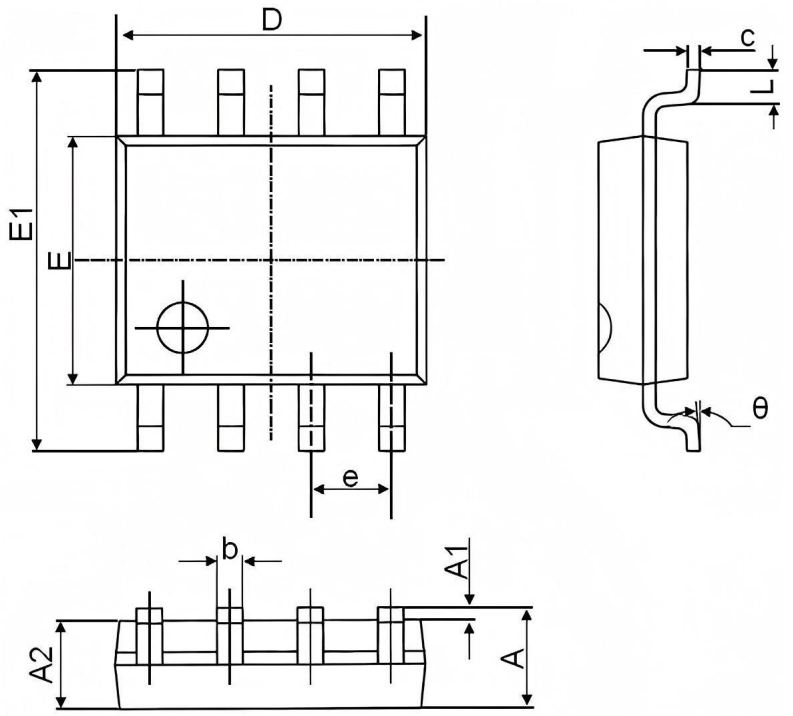


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Outlines Dimensions (Units: mm)

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

***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.