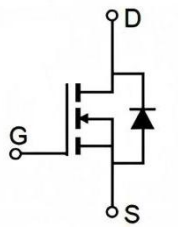
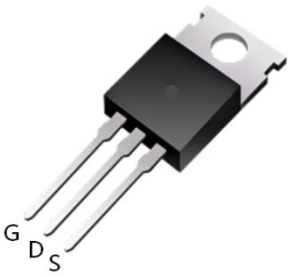
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	200	V
$R_{DS(on)}$	20	mΩ
I_D	100	A





TO-220

Features

- Super Low Gate Charge
- 100% EAS Guaranteed
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Applications

- Motor control and drive
- Battery management
- Uninterruptible Power Supply(UPS)

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1,6]	T_C=25℃	I_D	100	A
Continuous Drain Current [1,6]	T_C=100℃	I_D	63	A
Peak Drain Current, Pulsed [2]		I_{DM}	400	A
Single Pulse Avalanche Energy [3]		E_{AS}	1190	mJ
Power Dissipation [4]	T_C=25℃	P_D	272	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case [1]	$R_{\theta JC}$	0.46	℃/W
Thermal Resistance from Junction to Ambient [1]	$R_{\theta JA}$	--	℃/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	200	--	--	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=150V, V_{GS}=0V,T_J=25℃	--	--	1	μA
		V_{DS}=150V, V_{GS}=0V,T_J=25℃	--	--	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Drain-source on-state resistance [2]	$R_{DS(ON)}$	V_{GS}=10V, I_D=61A	--	20	25.5	mΩ
		V_{GS}=4.5V, I_D=20A	--	--	--	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS},I_D=250μA	3	--	5	V
Dynamic Parameters						
Gate resistance	R_g	V_{DS} =0V, f=1MHz	--	1.2	--	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=31A	--	73	--	S
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=50V f=1MHz	--	8826	--	pF
Output Capacitance	C_{oss}		--	532	--	
Reverse Transfer Capacitance	C_{rss}		--	148	--	
Switching Characteristics						
Total gate charge	Q_g	V_{DS}=50V,V_{GS}=10V I_D=61A	--	134	--	nC
Gate-source charge	Q_{gs}		--	49.6	--	
Gate-drain charge	Q_{gd}		--	39.6	--	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=50V R_G=3Ω ,R_L=1.25Ω	--	36.3	--	nS
Rise time	t_r		--	9.2	--	
Turn-Off Delay Time	$t_{d(off)}$		--	64	--	
Fall time	t_f		--	6.3	--	
Drain-Source Body Diode Characteristics						
Maximum Body-Diode Continuous Current [1,4]	I_S	-	--	--	65	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=31A	--	--	1.2	V
Reverse Recovery Time	t_{rr}	I_S=61A;dIF/dt=100A/μs	--	102	--	ns
Reverse Recovery Charge	Q_{rr}		--	550.3	--	nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.EAS condition: TJ=25℃,VDD=40V,VG=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Characteristics

Figure 1. Output Characteristics

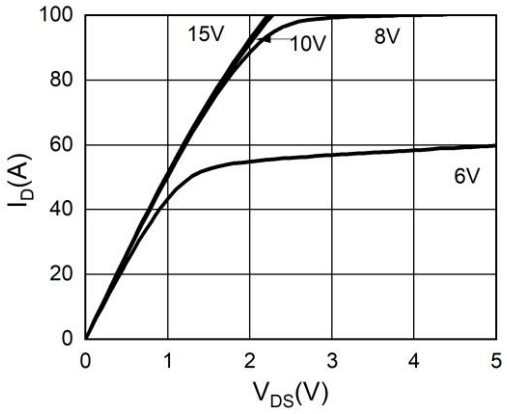


Figure 2. Transfer Characteristics

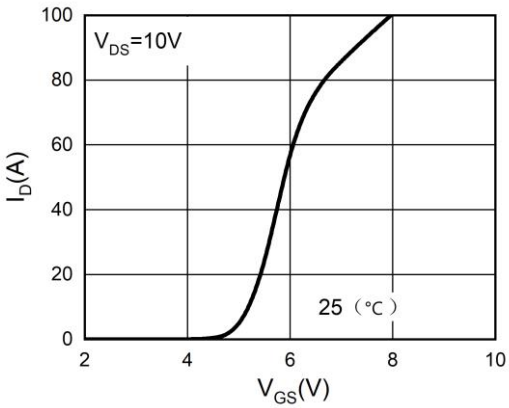


Figure 3. Power Dissipation

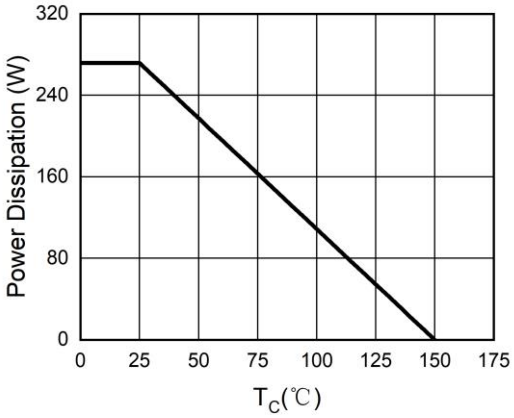


Figure 4. Drain Current

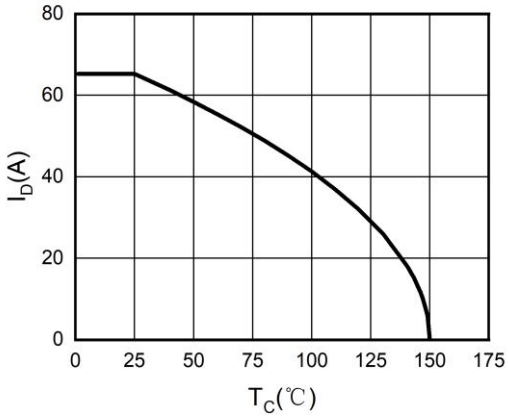


Figure 5. BV_{DSS} vs Junction Temperature

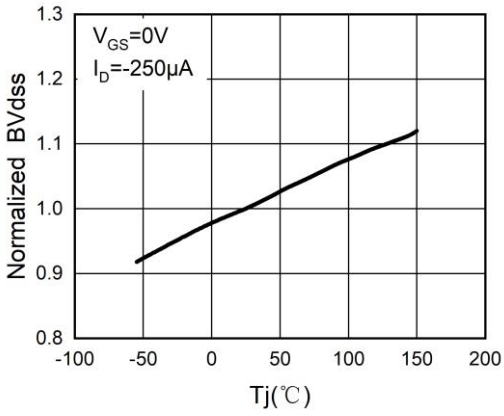


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

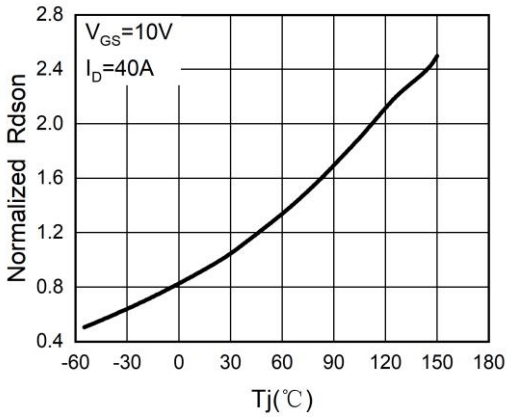


Figure 7. Gate Charge Waveforms

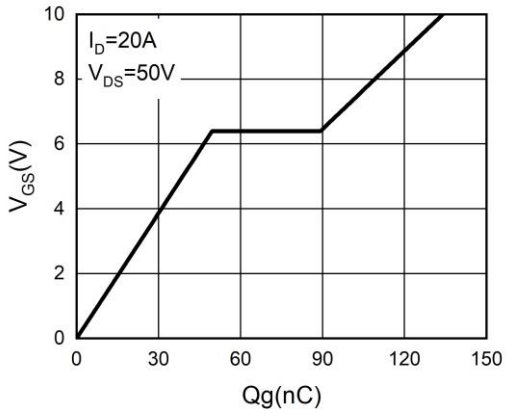


Figure 8. Capacitance

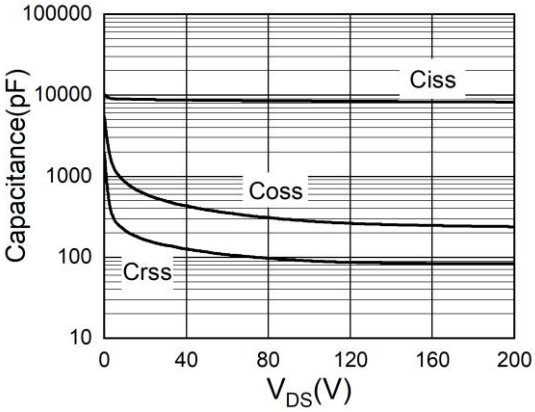


Figure 9. Body-Diode Characteristics

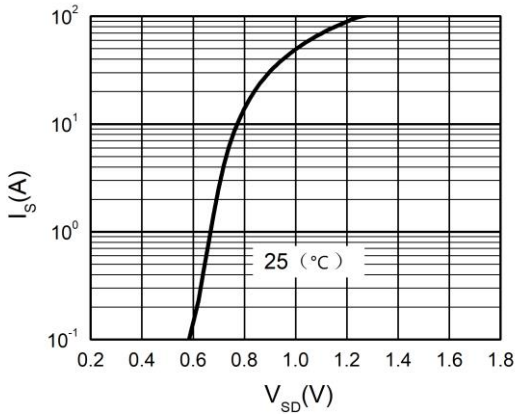
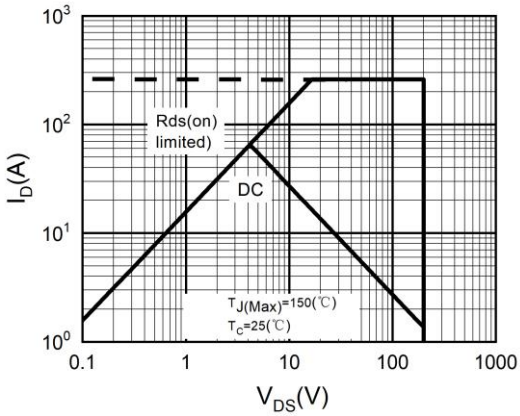
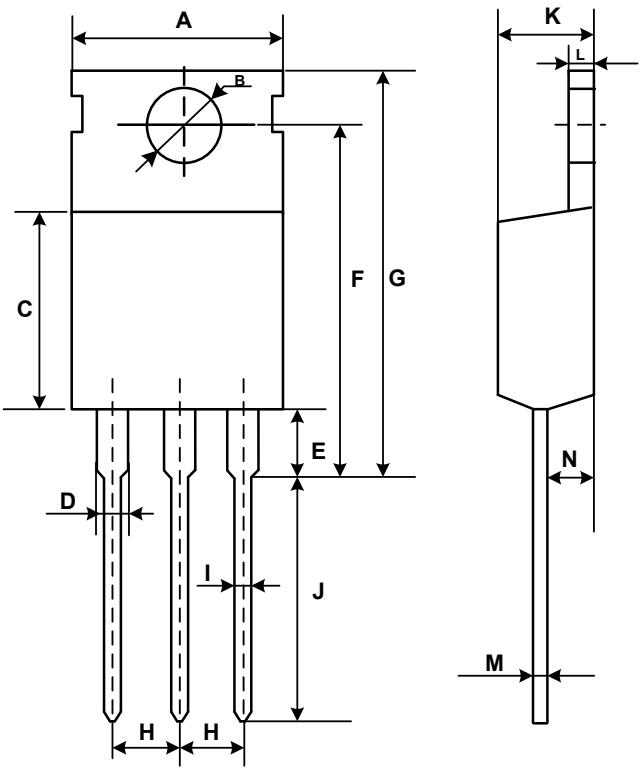


Figure 10. Maximum Safe Operating Area



Package Outline

TO-220



SYMBOL	MM	
	MIN	MAX
A	9.70	10.30
B	3.40	3.80
C	8.80	9.40
D	1.17	1.47
E	2.60	3.50
F	15.10	16.70
G	19.55MAX	
H	2.54REF	
I	0.70	0.95
J	9.35	11.00
K	4.30	4.77
L	1.20	1.45
M	0.40	0.65
N	2.20	2.60

***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.