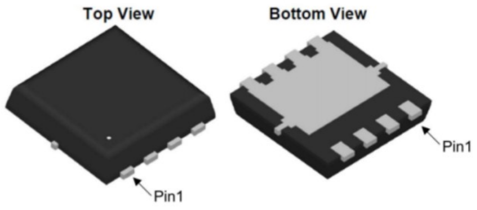
$60V_{DS}$/±$20V_{GS}$ N-Channel Enhancement Mode MOSFET

Features

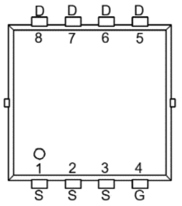
- V_{DS}=60V,I_D=35A
- $R_{DS(ON)}$=13mΩ（TYP.）V_{GS}=10V
- $R_{DS(ON)}$=18mΩ（TYP.）V_{GS}=4.5V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

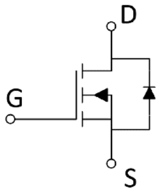
PDFN3030



Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion





Ordering Information

Temperature Range	Package		Orderable Device	Package Qty.
-55℃~+125℃	PDFN3030	Pb-Free	ZMS090N06M	5000pcs/Reel

Absolute Maximum Ratings

(T_C=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	60	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	35	A
Continuous Drain Current (T_C=100℃)		20	A
Pulesd Drain Current	I_{DM}	180	A
Continuous Drain Current (T_A=25℃)	I_{DSM}	35	A
Continuous Drain Current (T_A=70℃)		22	A
Avalanche Current	I_{AS}	31	A
Single Pulsed Avalanche Energy	E_{AS}	24	mJ
V_{DS} Spike 100ns	V_{SPIKE}	36	V
Maximum Power Dissipation (T_C =25℃)	P_D	23	W
Maximum Power Dissipation (T_C =100℃)		9	W
Maximum Power Dissipation (T_A=25℃)	P_{DSM}	3	W
Maximum Power Dissipation (T_A =70℃)		2	W
Operating,Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	4.4	-	℃/ W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	62	-	℃/ W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=250μA	1.2	1.8	2.2	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A	-	13	15	mΩ
		V_{GS}=4.5V,I_D=20A	-	18	23	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=15V V_{GS}=0V f=1MHz	-	956	-	pF
Output capacitance	C_{oss}		-	377	-	
Reverse transfer capacitance	C_{rss}		-	65	-	
Gate Resistance	R_g	f=1MHz	-	1.5	-	Ω
Total Gate Charge	Q_g	V_{DS}=15V V_{GS}=10V I_D=20A	-	15.9	-	nC
Gate Source Charge	Q_{gs}		-	2.9	-	
Gate Drain Charge	Q_{gd}		-	3.3	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=15V R_L=0.75Ω R_G=3Ω	-	6.3	-	ns
Rise time	t_r		-	2.7	-	
Turn-off delay Time	$t_{d(off)}$		-	18.6	-	
Fall time	t_f		-	4.2	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{SD}=1A	-	0.7	1	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_{SD}=20A d_i/d_t=500A/μs	-	10.4	-	ns
Reverse Recovery Charge	Q_{rr}		-	13.5	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

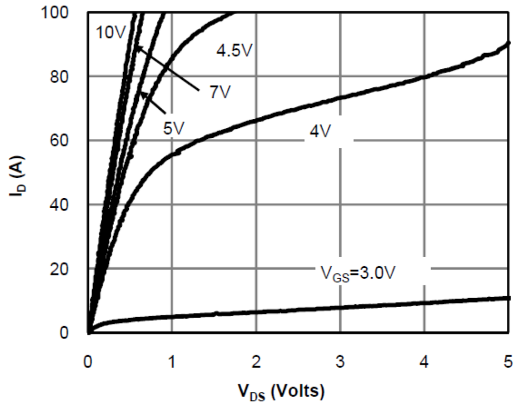


Figure 2. Transfer Characteristics

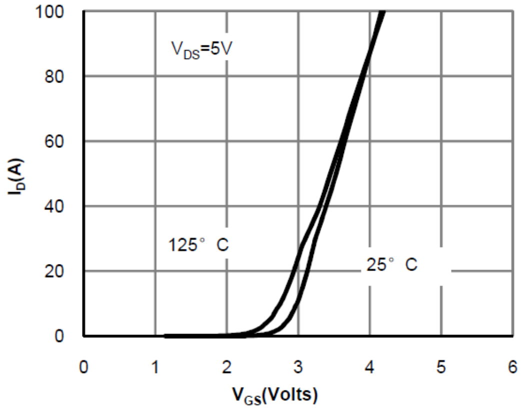


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

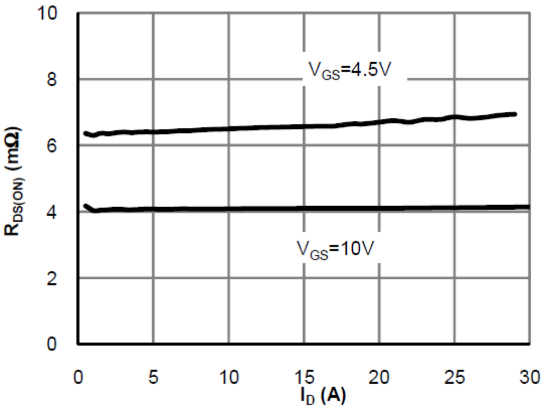


Figure 4. On-Resistance vs. Junction Temperature

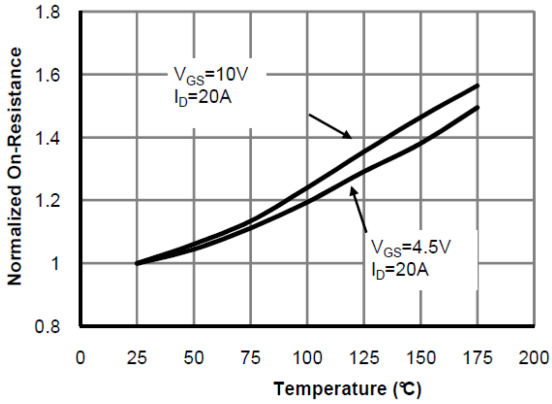


Figure 5. On-Resistance vs. Gate-Source Voltage

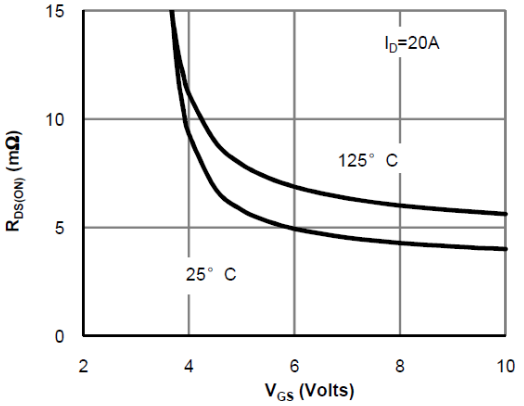


Figure 6. Body-Diode Characteristics

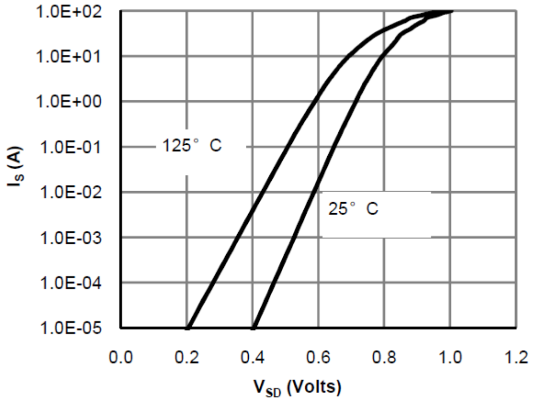


Figure 7. Gate-Charge Characteristics

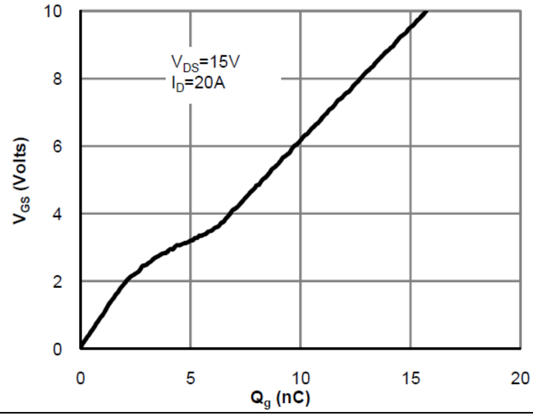


Figure 8. Capacitance Characteristics

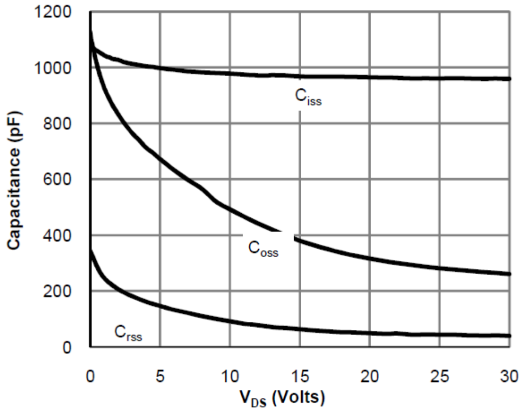


Figure 9. Maximum Forward Biased Safe Operating Area

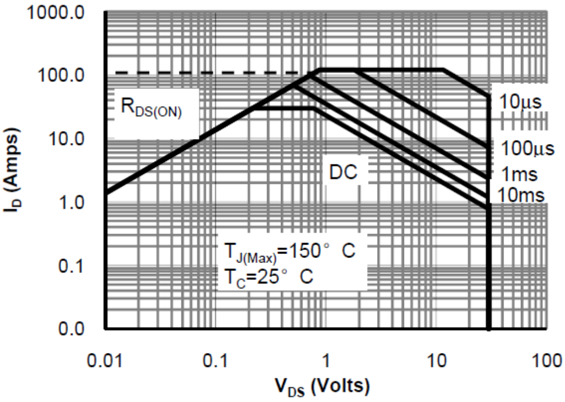


Figure 10. Single Pulse Power Rating Junction-to-Case

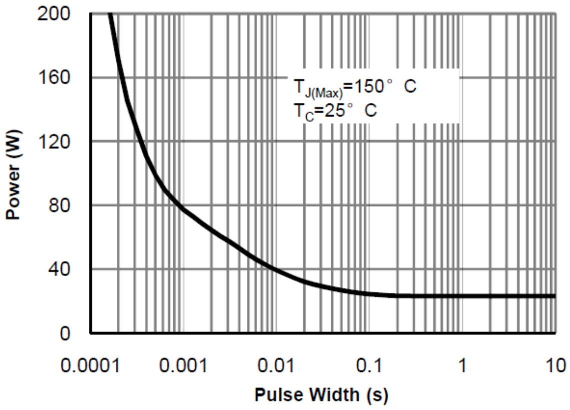


Figure 11. Normalized Maximum Transient Thermal Impedance

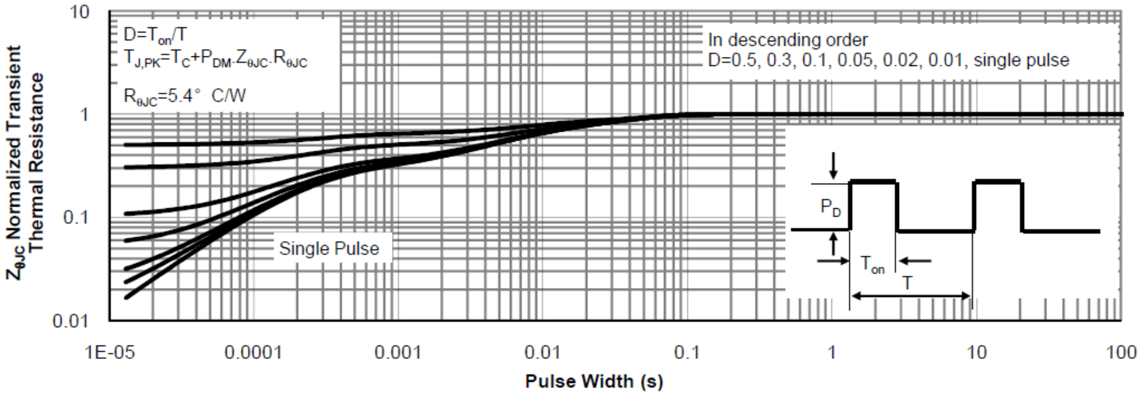


Figure 12. Power De-rating

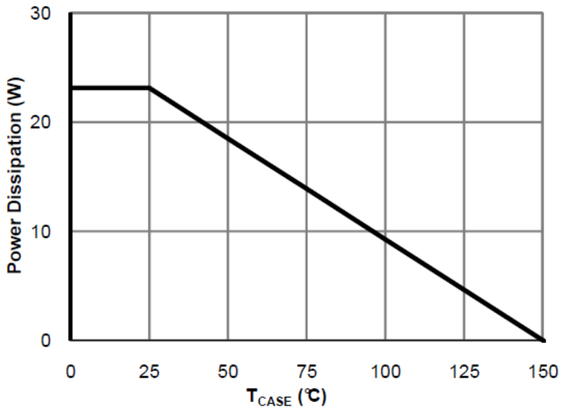


Figure 13. Current De-rating

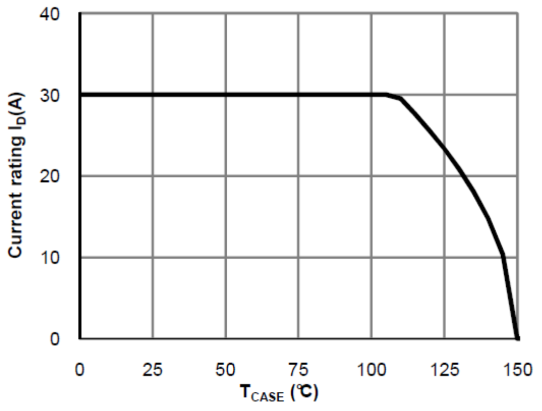


Figure 14. Single Pulse Power Rating Junction-to-Ambient

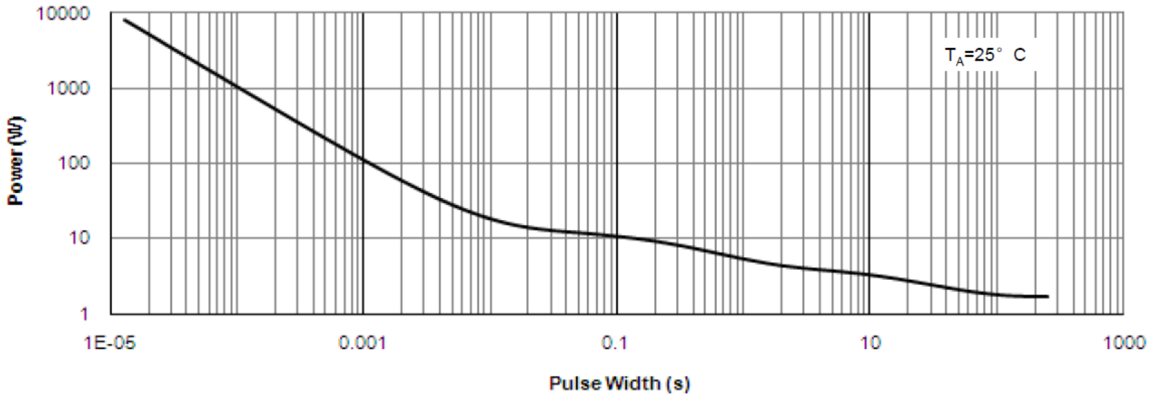
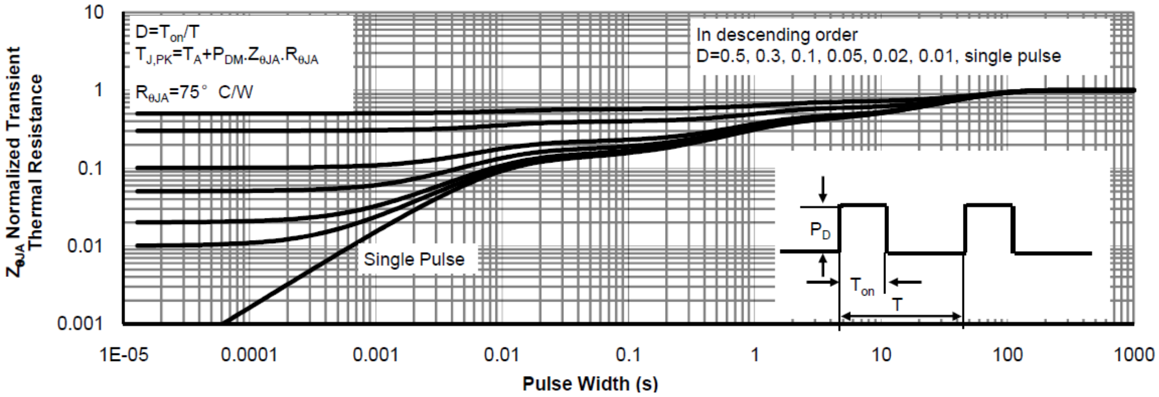
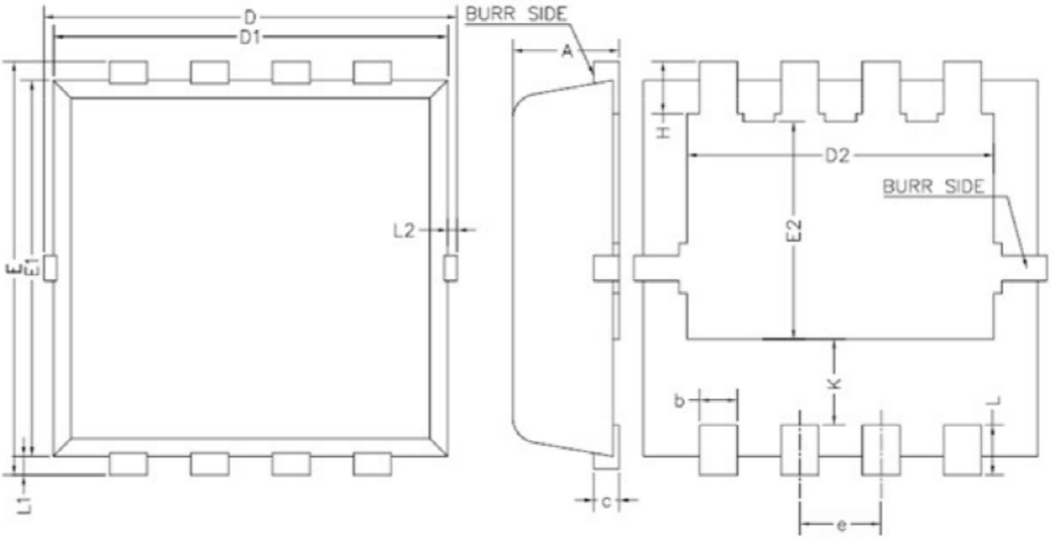


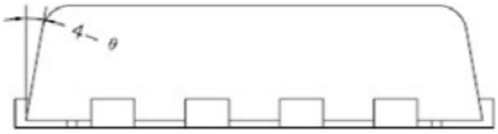
Figure 15. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

PDFN3030





符号	尺寸（mm）			符号	尺寸（mm）		
	最小值	典型值	最大值		最小值	典型值	最大值
A	0.70	0.80	0.90	E1	2.90	3.00	3.10
b	0.25	0.30	0.35	E2	1.64	1.74	1.84
c	0.14	0.15	0.20	H	0.32	0.42	0.52
D	3.10	3.30	3.50	K	0.59	0.69	0.79
D1	3.05	3.15	3.25	L	0.25	0.40	0.55
D2	2.35	2.45	2.55	L1	0.10	0.15	0.20
e	0.55	0.65	0.75	L2	-	-	0.15
E	3.10	3.30	3.50	θ	8°	10°	12°