

■ PRODUCT CHARACTERISTICS

V _{DSS}	60V
R _{DS(on)} typ(@V _{GS} =10 V)	22.5mΩ
R _{DS(on)} typ(@V _{GS} =4.5 V)	28mΩ
I _D	20A

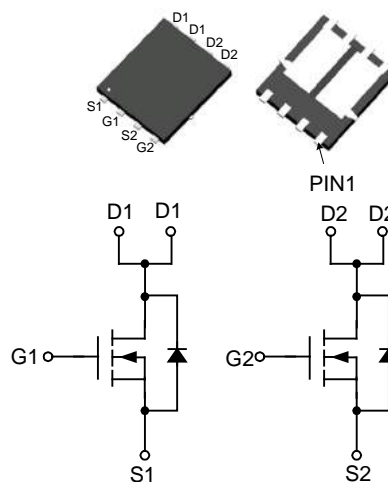
■ FEATURE

- Low R_{DS(ON)}
- Low gate charge
- Pb-free lead plating

■ APPLICATIONS

- Motor driving in power tool
- E-vehicla robotics

Pin description



N+N MOSFET

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT6929G	PDFN5X6	5000Pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS(T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Value	units	
Drain-Source Voltage	V _{DS}	60	V	
Gate-Source Voltage	V _{GS}	±20	V	
Drain Current-Continuous	T _C =25°C	I _D	20	A
	T _C =100°C	I _D	13	A
Pulsed Drain Current	I _{DM}	80	A	
Avalanche Energy	E _{AS}	13.5	mJ	
Maximum Power Dissipation	T _C =25°C	P _D	28	W
	T _C =100°C	P _D	11.1	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C	
Thermal Resistance, Junction-to-Case	R _{θJC}	5.2	°C/W	

■ Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48\text{V}, V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$	-	-	1.0	μA
			-	-	5.0	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.2	-	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 5\text{A}$	-	22.5	29	$\text{m}\Omega$
		$V_{GS} = 4.5\text{V}, I_D = 3\text{A}$	-	28	38	$\text{m}\Omega$
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{V}, I_D = 5\text{A}$	-	17.0	-	S
Diode Forward Voltage	V_{SD}	$I_S = 1\text{A}, V_{GS} = 0\text{V}$	-	0.75	1.0	V
Diode Continuous Current	I_S	$T_C = 25^\circ\text{C}$	-	-	23	A
DYNAMIC PARAMETERS						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 30\text{V}, f = 1\text{MHz}$	-	288	-	pF
Output Capacitance	C_{oss}		-	92	-	pF
Reverse Transfer Capacitance	C_{rss}		-	22	-	pF
Gate Resistance	R_g	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$	-	5.0	-	Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q_g	$V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 30\text{V}, I_D = 5\text{A}$	-	50	-	nC
Gate Source Charge	Q_{gs}		-	6	-	nC
Gate Drain Charge	Q_{gd}		-	15	-	nC
Turn-On DelayTime	$t_{D(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 30\text{V}$ $R_L = 6\Omega, R_{GEN} = 6\Omega$	-	6.0	-	nS
Turn-On Rise Time	t_r		-	62	-	nS
Turn-Off DelayTime	$t_{D(off)}$		-	18.5	-	nS
Turn-Off Fall Time	t_f		-	97	-	nS
Body Diode Reverse Recovery Time	t_{rr}		$I_F = 5\text{A}, di_F/dt = 100\text{A}/\mu\text{s}$	-	13.0	-
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 5\text{A}, di_F/dt = 100\text{A}/\mu\text{s}$	-	6.0	-	nC

■ TYPICAL CHARACTERISTICS

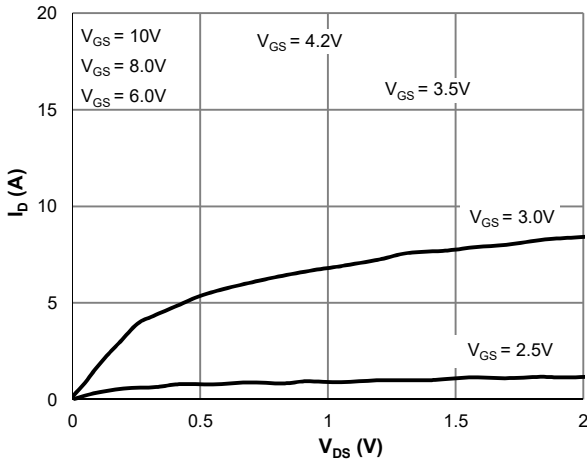


Figure 1: Saturation Characteristics

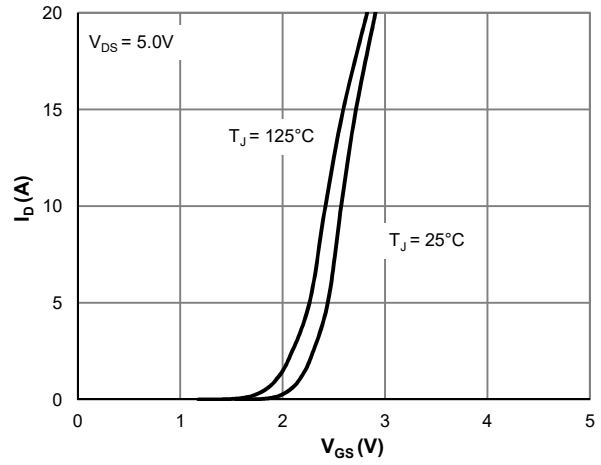


Figure 2: Transfer Characteristics

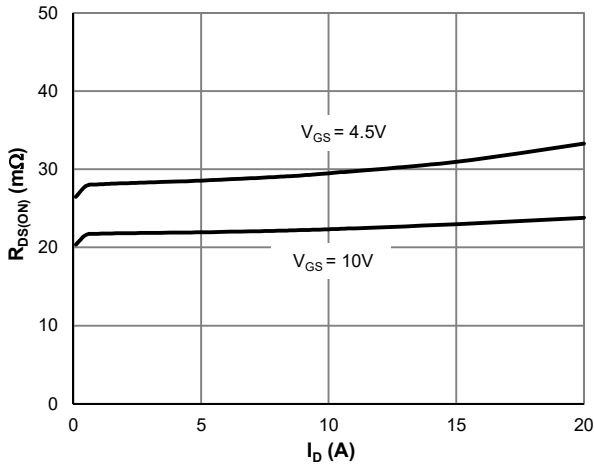


Figure 3: $R_{DS(ON)}$ vs. Drain Current

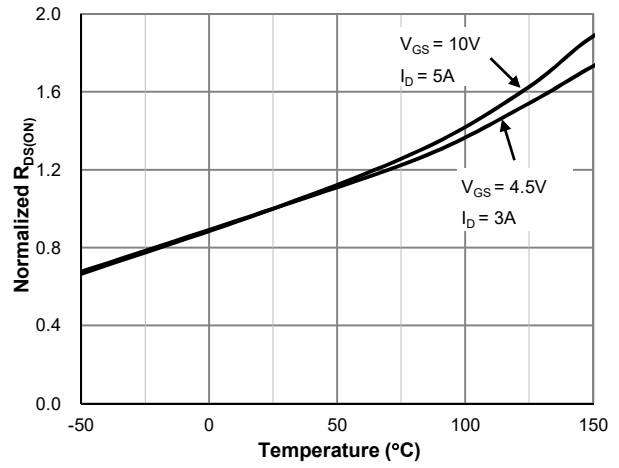


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

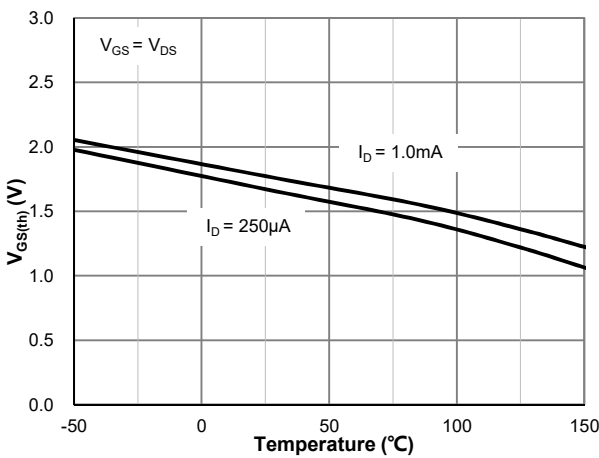


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

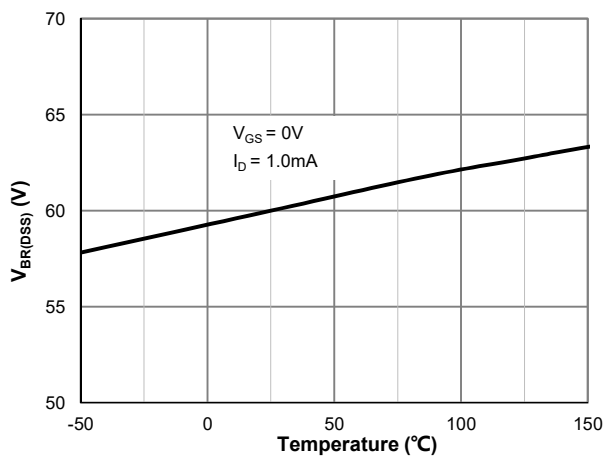


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

■ TYPICAL CHARACTERISTICS(Cont.)

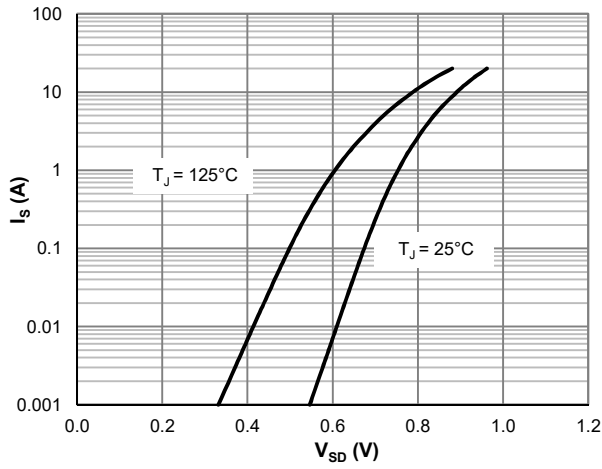


Figure 7: Body-Diode Characteristics

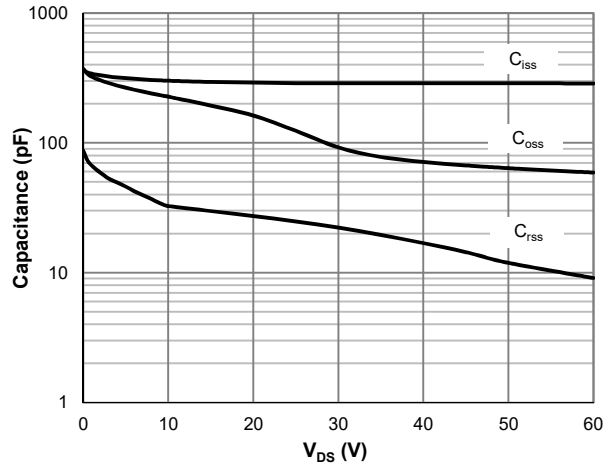


Figure 8: Capacitance Characteristics

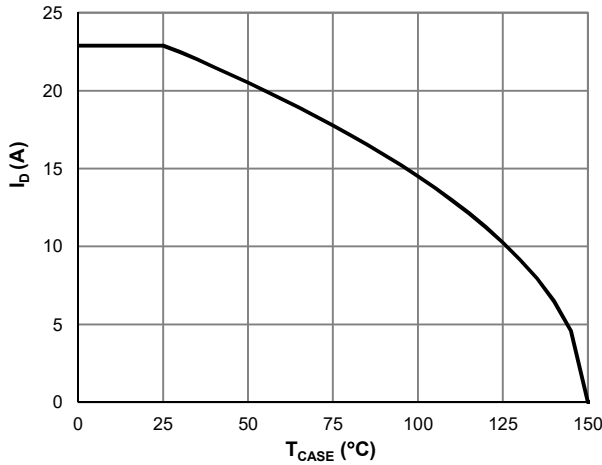


Figure 9: Current De-rating

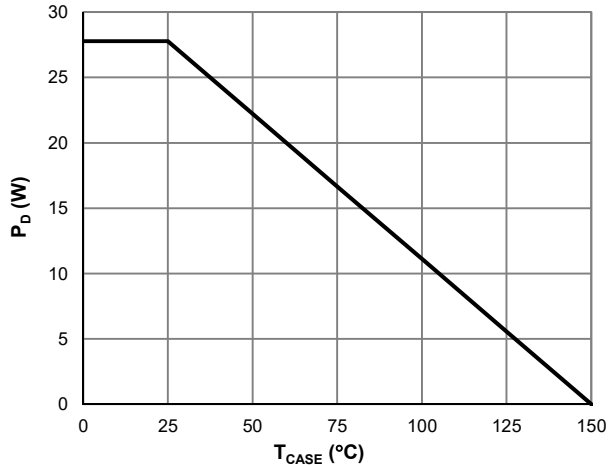


Figure 10: Power De-rating

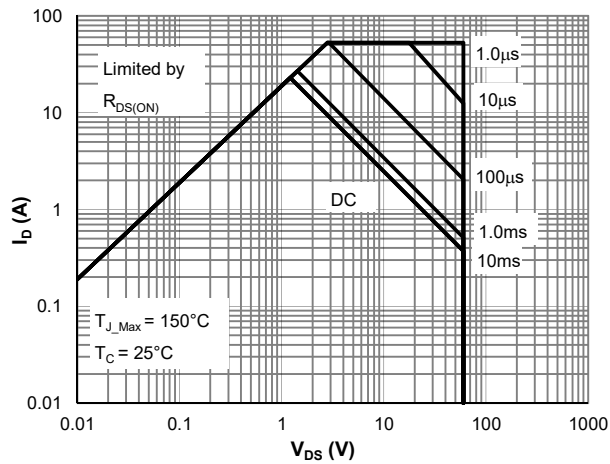


Figure 11: Maximum Safe Operating Area

■ TYPICAL CHARACTERISTICS(Cont.)

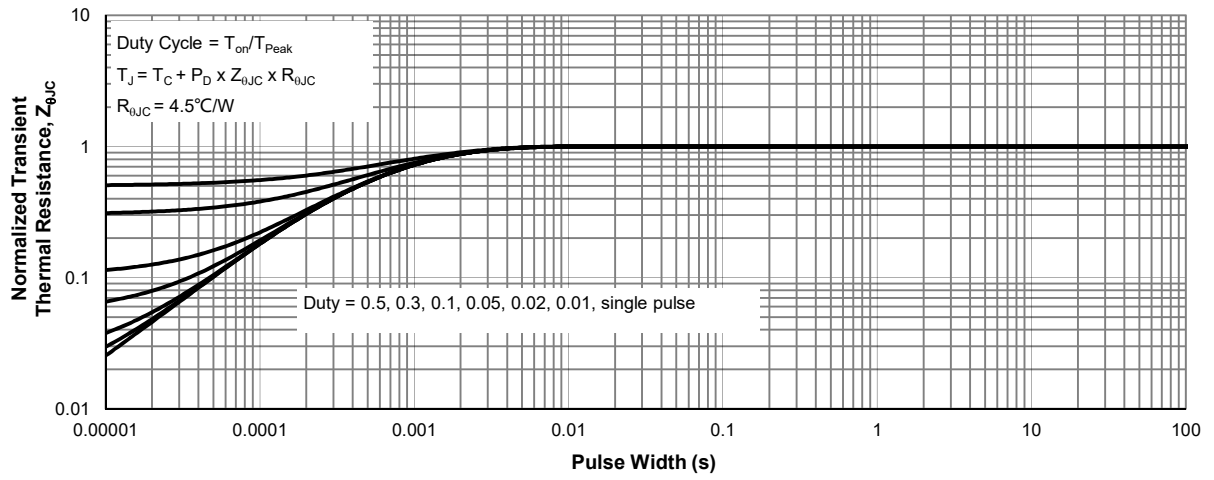
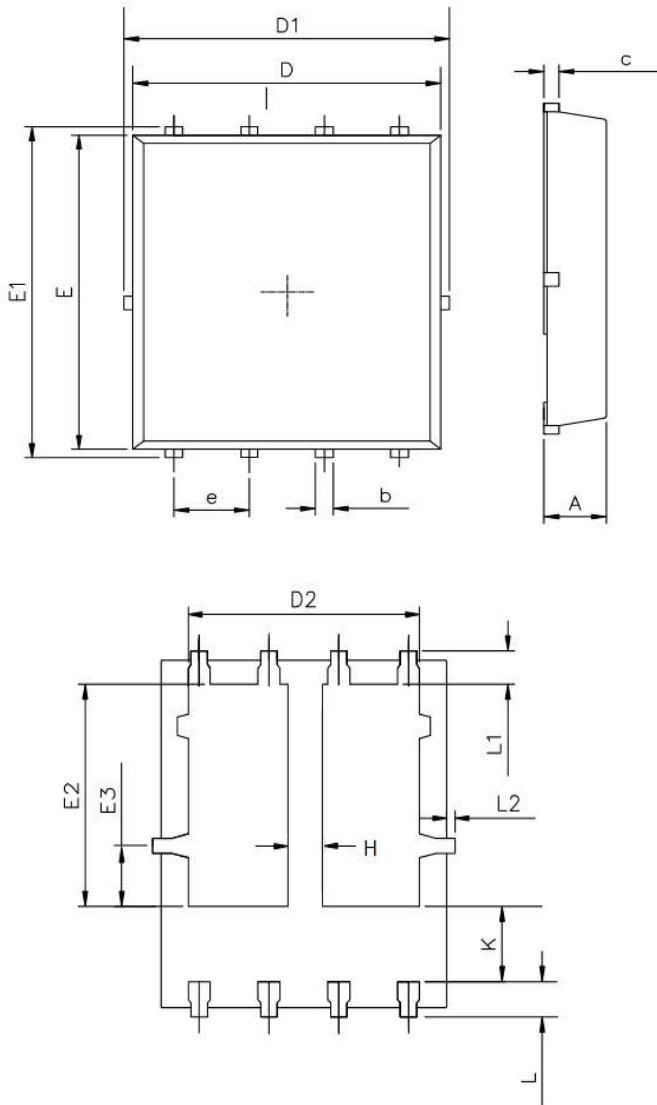


Figure 12: Normalized Maximum Transient Thermal Impedance

■PDFN5X6-8L PACKAGE MECHANICAL DATA



UNIT:mm

	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.35	0.50
c	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
e		1.27	
L	0.40	0.55	0.70
L1		0.65	
L2	0.00		0.15
K	1.00	1.30	1.50
H	0.5	0.6	0.7

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