

■ PRODUCT CHARACTERISTICS

VDSS	-40V
$R_{DS(on)typ}(@V_{GS}=-4.5V)$	13mΩ
$R_{DS(on)typ}(@V_{GS}=-10V)$	10mΩ
ID	-30A

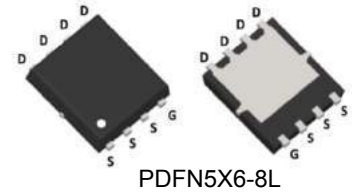
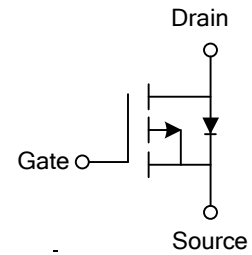
■ FEATURES

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

■ APPLICATION

PWM Applications
Load Switch
Power Management

Symbol



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4712G	PDFN5X6-8L	5000 pieces /Reel

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	-40	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	T _C = 25°C	-30
		T _C = 100°C	-20
Pulsed Drain Current	I _{DM}	-120	A
Single Pulsed Avalanche Energy	E _{AS}	110	mJ
Power Dissipation	P _D	20	W
Thermal Resistance, Junction to Case	R _{θJC}	6.3	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	μA
Gate to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$	-	10	12.5	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	-	13	17	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	3700	-	pF
Output Capacitance	C_{oss}		-	340	-	pF
Reverse Transfer Capacitance	C_{rss}		-	290	-	pF
Total Gate Charge	Q_g	$V_{DS}=-20V, I_D=-20A,$ $V_{GS}=-10V$	-	68	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	nC
Gate-Drain("Miller") Charge	Q_{gd}		-	14	-	nC
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-20V, I_D=-20A,$ $V_{GS}=-10V, R_{GEN}=2.4\Omega$	-	10	-	ns
Turn-on Rise Time	t_r		-	82	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	93	-	ns
Turn-off Fall Time	t_f		-	74	-	ns
Drain-source diode characteristics and maximum ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S		-	-	-30	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}		-	-	-120	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-30A$	-	-0.8	-1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=-30A,$ $di/dt=100A/\mu s$	-	20	-	ns
Reverse Recovery Charge	Q_{rr}		-	13	-	nC

■ TYPICAL CHARACTERISTICS

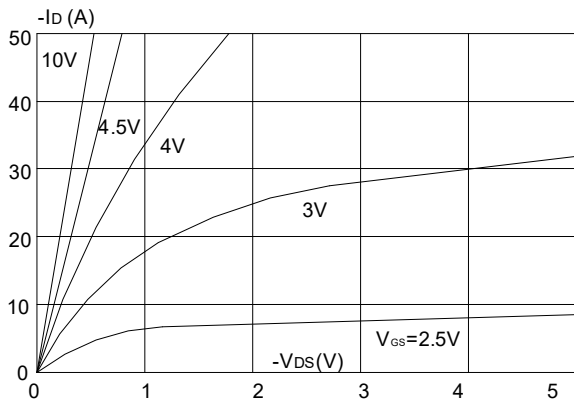


Figure1: Output Characteristics

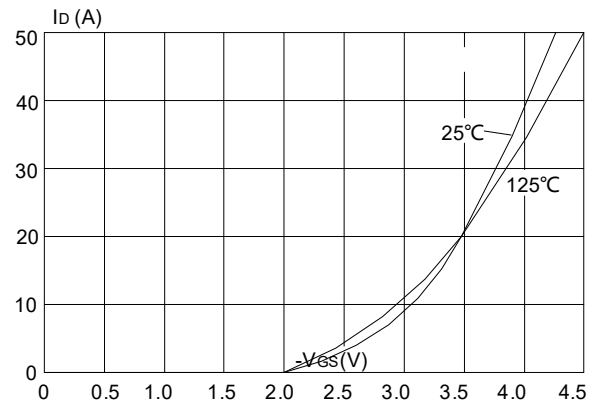


Figure2: Typical Transfer Characteristics

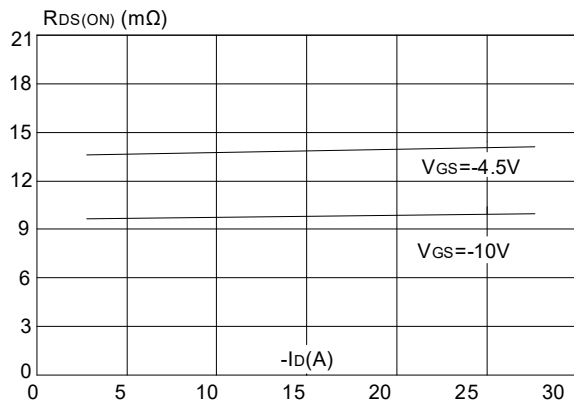


Figure3: On-resistance vs. Drain Current

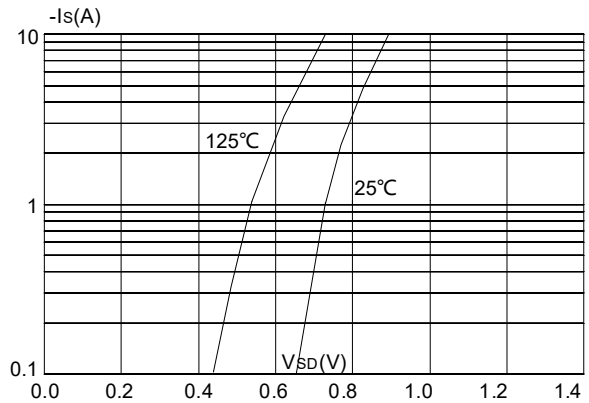


Figure4: Body Diode Characteristics

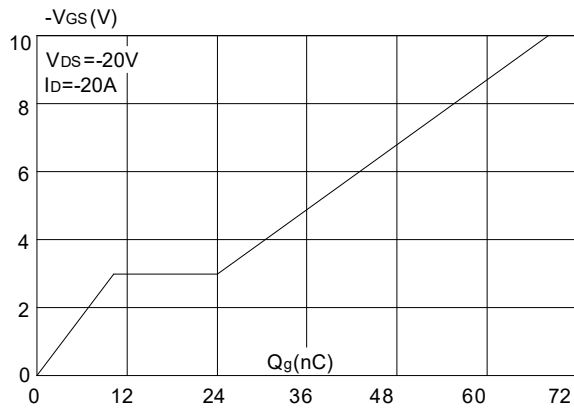


Figure5: Gate Charge Characteristics

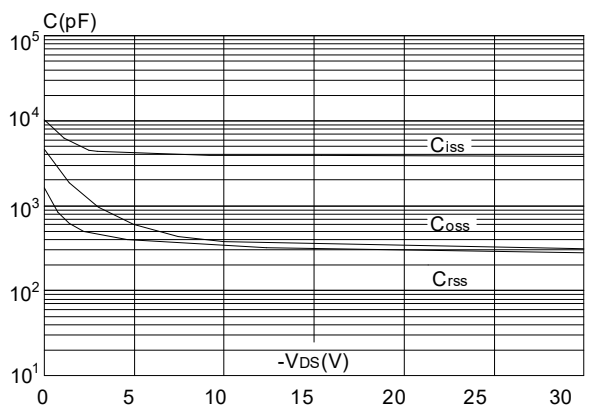


Figure6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

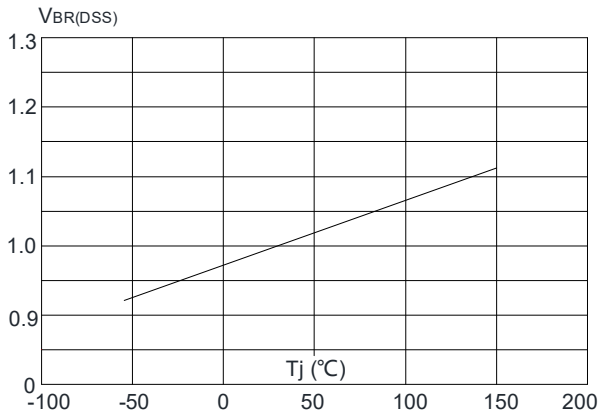


Figure7 : Normalized Breakdown Voltage vs. Junction Temperature

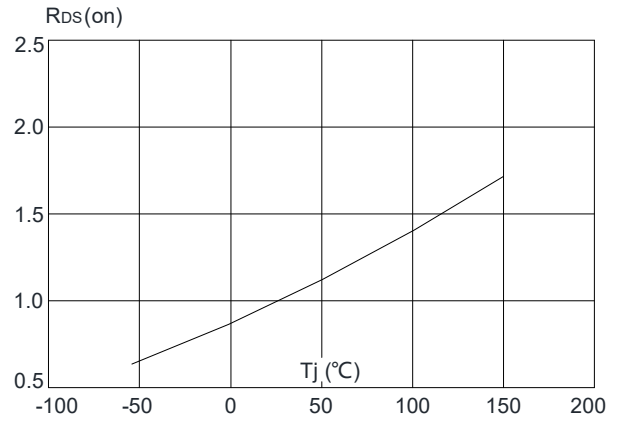


Figure8 : Normalized on Resistance vs. Junction Temperature

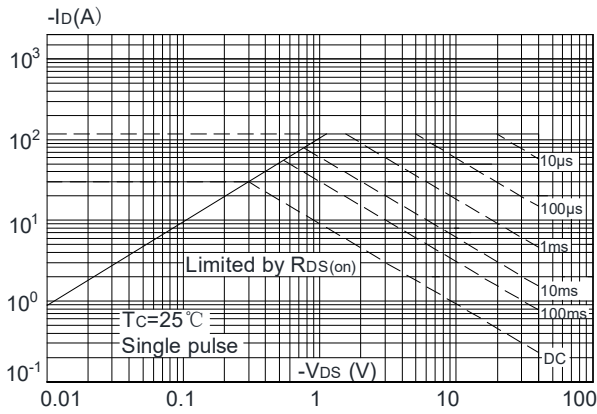


Figure9 : Maximum Safe Operating Area

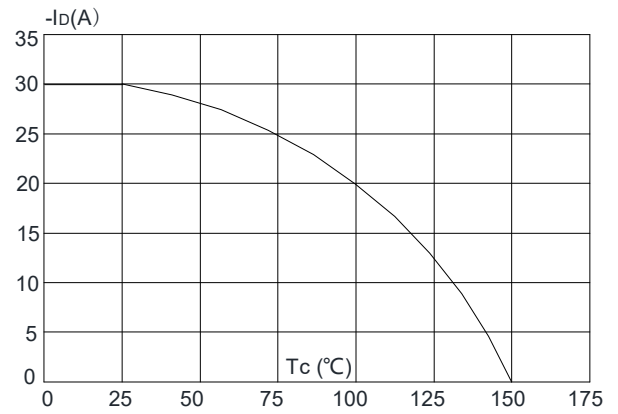


Figure10: Maximum Continuous Drain Current vs. Case Temperature

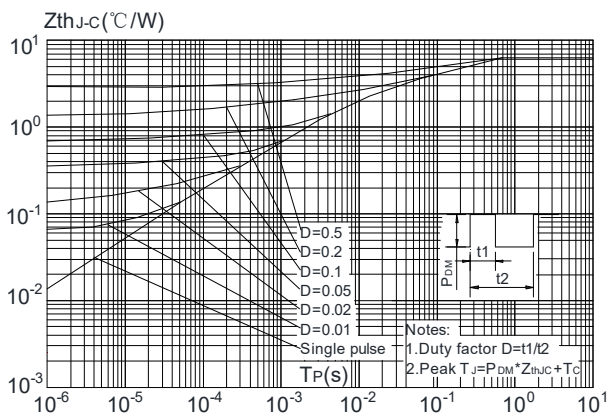
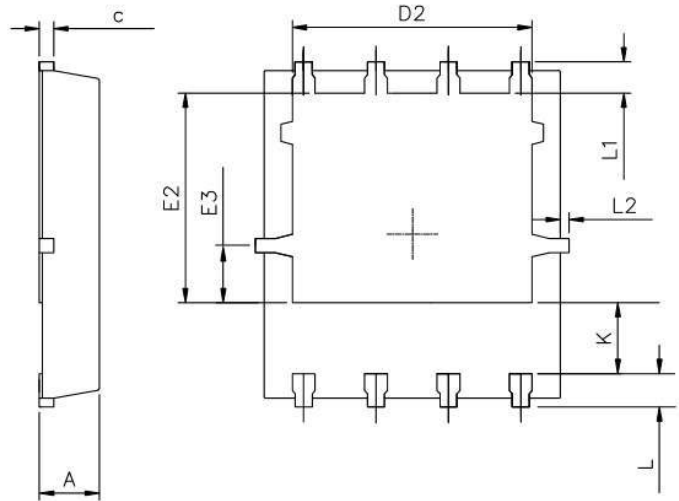
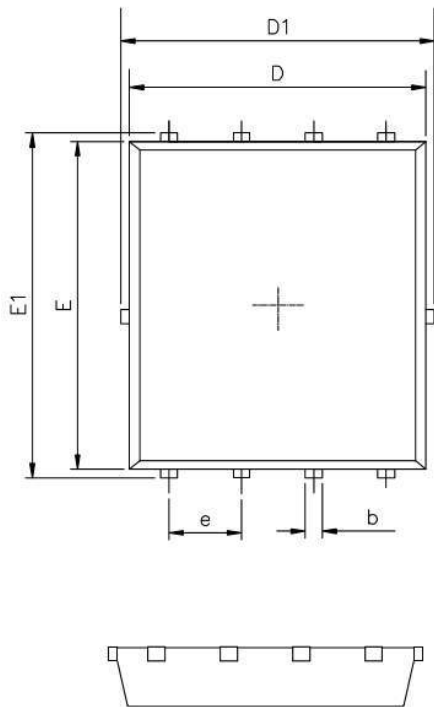
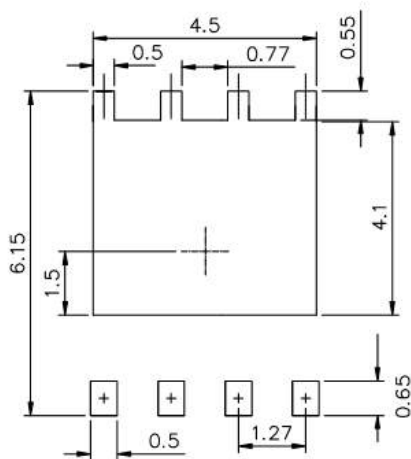


Figure11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

■ PDFN5X6-8L Package Mechanical Data



RECOMMENDED LAND PATTERN



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

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