

PRODUCT CHARACTERISTICS

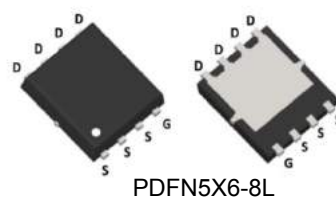
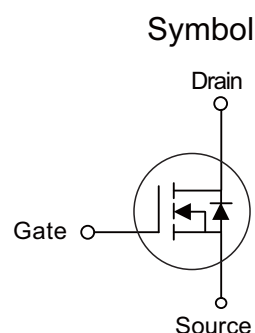
V_{DS}	40V
$R_{DS(on)typ}(V_{GS}=10V)$	1.9mΩ
$R_{DS(on)typ}(V_{GS}=4.5V)$	2.5mΩ
I_D	100A

APPLICATIONS

- Portable Equipment and Battery Powered systems.
- Power Management in Notebook Computer

FEATURES

- Lower $R_{DS(on)}$ to Minimize Conduction Losses
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested



ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4124G	PDFN5X6-8L	5000 pieces/Reel

ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}\text{C}$ Unless Otherwise Noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	100	A
	$T_C=100^{\circ}\text{C}$	I_D	65	A
Pulsed Drain Current		I_{DM}	400	A
Single Pulsed Avalanche Energy		E_{AS}	196	mJ
Power Dissipation		P_D	49	W
Junction to Case		$R_{\theta JC}$	2.6	$^{\circ}\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unti
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}	$V_{DS}=40V, V_{GS}=0V,$	-	-	1.0	μA
Gate to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}= \pm 20V$	-	-	± 100	nA
On characteristics						
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	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	1.9	2.4	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	2.5	3.2	m Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V,$ $f=1.0MHz$	-	6857	-	pF
Output Capacitance	C_{oss}		-	495	-	pF
Reverse Transfer Capacitance	C_{rss}		-	322	-	pF
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=30A,$ $V_{GS}=10V$	-	89	-	nC
Gate-Source Charge	Q_{gs}		-	18	-	nC
Gate-Drain("Miller") Charge	Q_{gd}		-	21	-	nC
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, I_D=30A,$ $R_L=1\Omega, R_{GEN}=3\Omega,$ $V_{GS}=10V$	-	15	-	ns
Turn-on Rise Time	t_r		-	21	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	42	-	ns
Turn-off Fall Time	t_f		-	13	-	ns
Drain-source diode characteristics and maximum ratings						
Maximum Continuous Forward Current	I_S		-	-	100	A
Maximum Pulsed Forward Current	I_{SM}		-	-	400	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}C,$	-	20	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=30A, di/dt=100A/\mu s$	-	19	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=30V, V_{GS}=10V, R_G=25\Omega, L=0.5mH, I_{AS}=28A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

■ TYPICAL CHARACTERISTICS

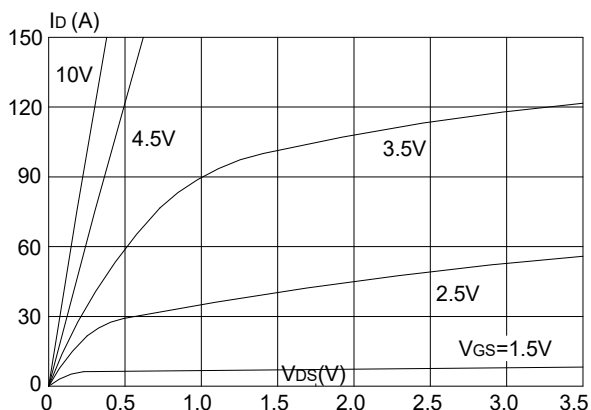


Figure1: Output Characteristics

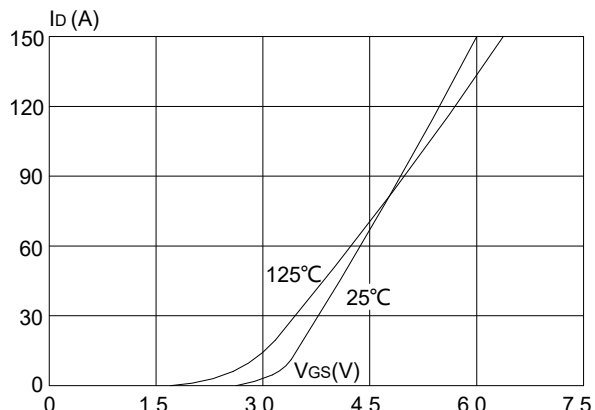


Figure2: Typical Transfer Characteristics

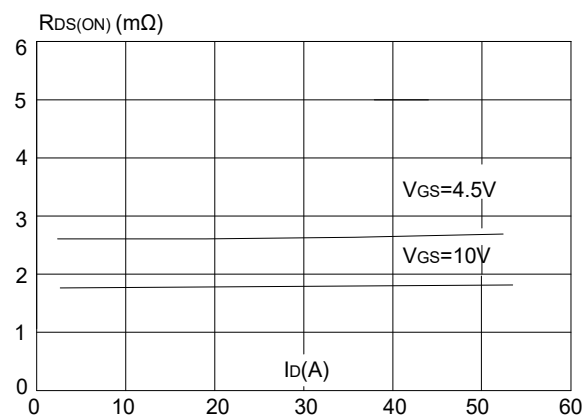


Figure3: On-resistance vs. Drain Current

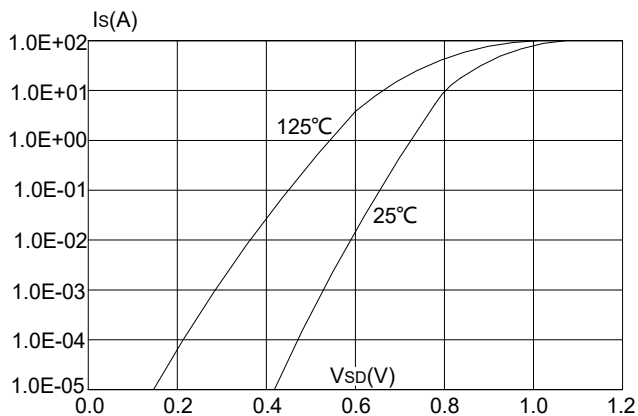


Figure4: Body Diode Characteristics

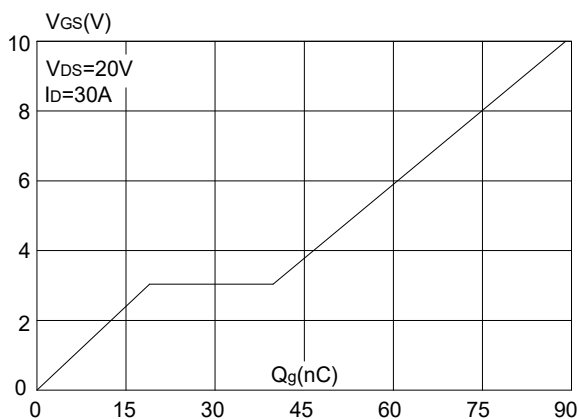


Figure5: Gate Charge Characteristics

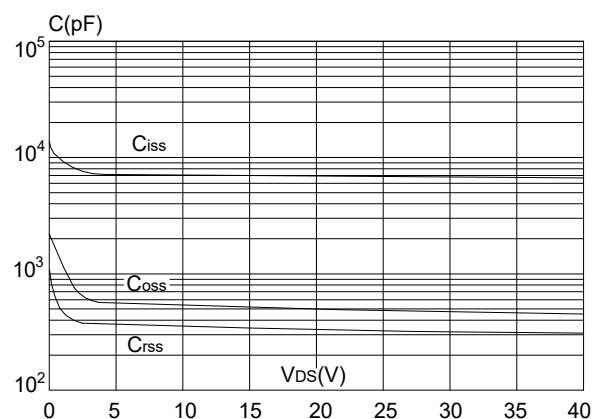


Figure6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

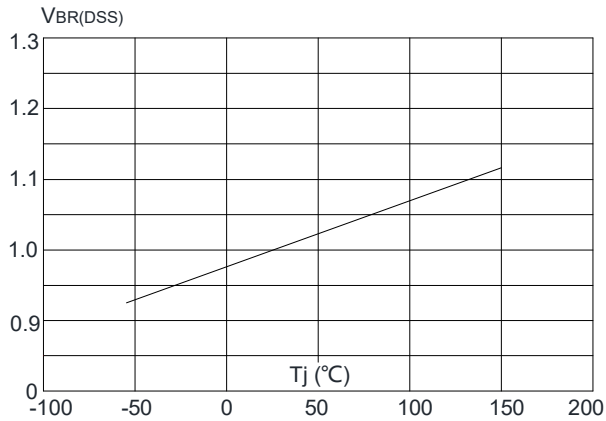


Figure7: Normalized Breakdown Voltage vs. Junction Temperature

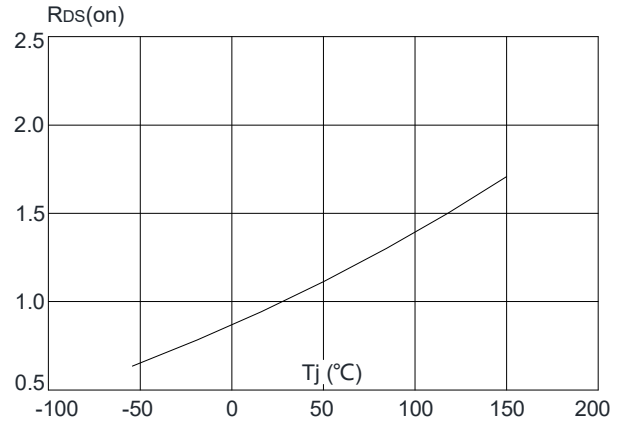


Figure8: Normalized on Resistance vs. Junction Temperature

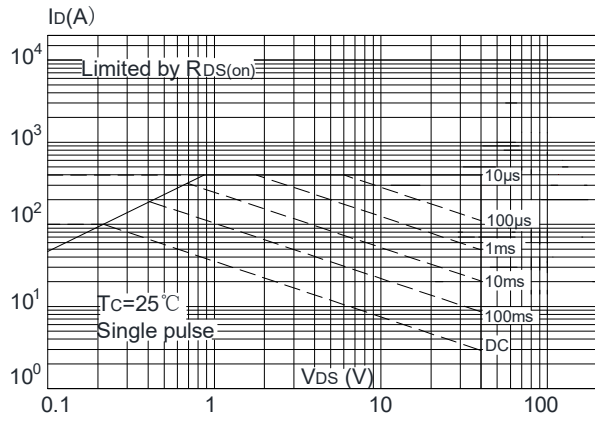


Figure9: Maximum Safe Operating Area

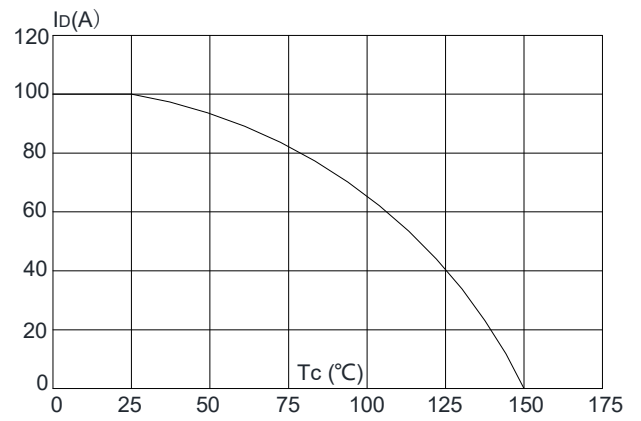


Figure10: Maximum Continuous Drain Current vs. Case Temperature

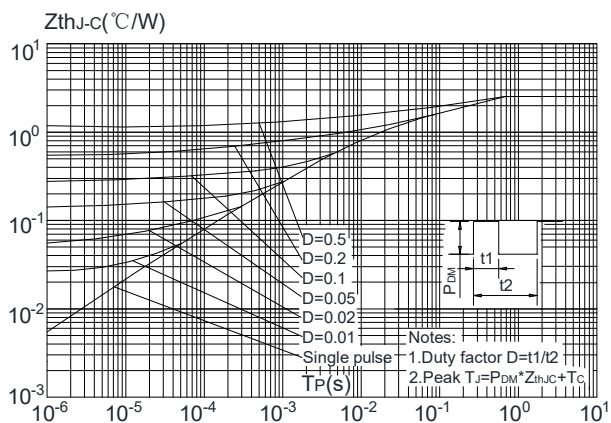
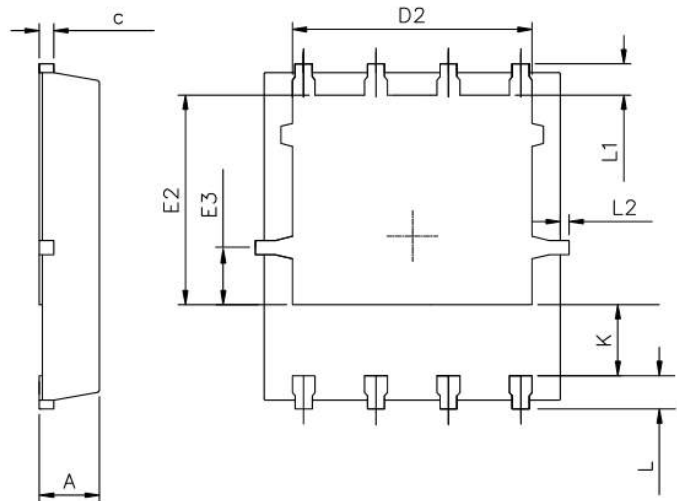
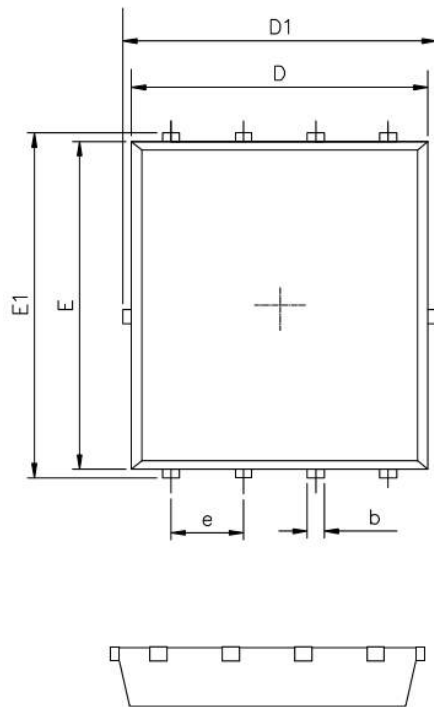
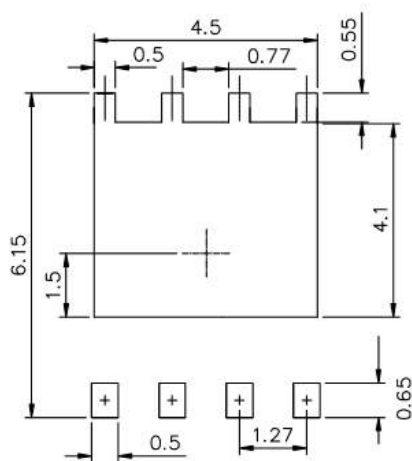


Figure11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

■ 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