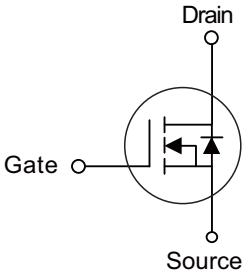
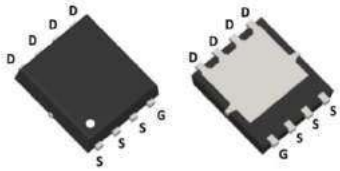
■ PRODUCT CHARACTERISTICS

V_{DSS}	60V
$R_{DS(ON)}$ Typ(@ V_{GS} =10V)	8mΩ
$R_{DS(ON)}$ Typ(@ V_{GS} =4.5V)	10mΩ
ID	50A

Symbol





■ 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	MOT6180J	PDFN3X3-8L	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS (T_J=25°C Unless Otherwise Noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	T_C=25°C	I_D	50	A
	T_C=100°C	I_D	39	A
Plused Drain Current		I_{DM}	200	A
Avalanche Energy		E_{AS}	350	mJ
Power Dissipation		P_D	60	W
Thermal Resistance,Junction-to-Case		$R_{\theta JC}$	2.1	℃/W
Junction Temperature		T_J	+150	°C
Storage Temperature Range		T_{STG}	-55 ~ +150	°C

■ ELECTRICAL CHARACTERISTICS (T =25℃ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.2	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=25A	-	8	9	mΩ
		V_{GS}=4.5V, I_D=25A	-	10	12	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=25A	10	-	-	S
Dynamic characteristics						
Input Capacitance	C_{lss}	V_{DS}=20V,V_{GS}=0V, F=1.0MHz	-	1100	-	PF
Output Capacitance	C_{oss}		-	360	-	PF
Reverse Transfer Capacitance	C_{rss}		-	19.2	-	PF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V,I_D=25A V_{GS}=10V,R_G=1.6Ω	-	8	-	nS
Turn-on Rise Time	t_r		-	2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	29	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=25A, V_{GS}=10V	-	34.8	-	nC
Gate-Source Charge	Q_{gs}		-	7	-	nC
Gate-Drain Charge	Q_{gd}		-	5.3	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=25A	-	-	1.2	V
Diode Forward Current	I_S		-	-	50	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F =25A di/dt = 100A/μs	-	38	-	nS
Reverse Recovery Charge	Qrr		-	48	-	nC

■ TYPICAL CHARACTERISTICS

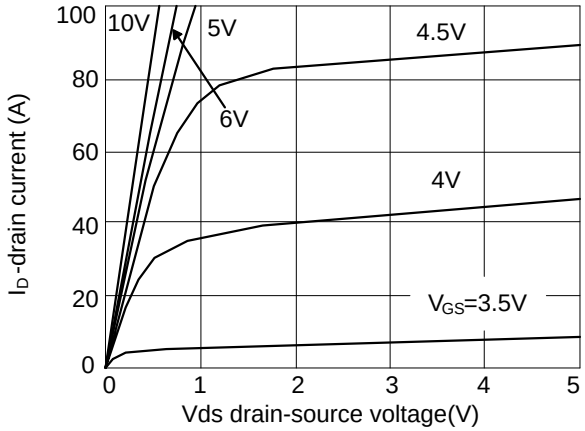


Figure 1 Output characteristics

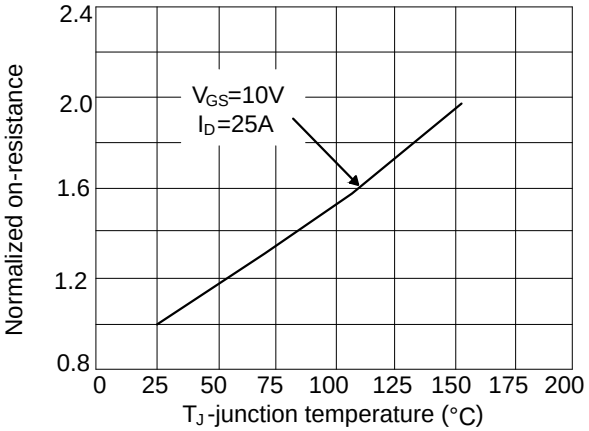


Figure 2 Rdso-junction temperature

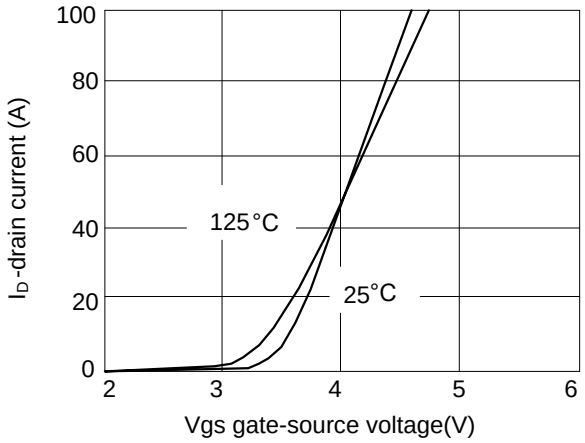


Figure 3 Transfer characteristics

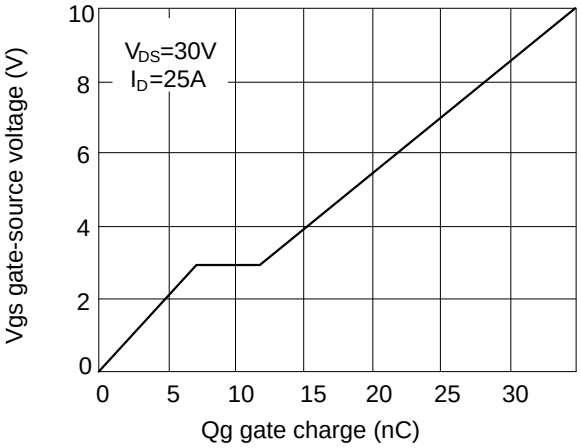


Figure 4 Gate charge

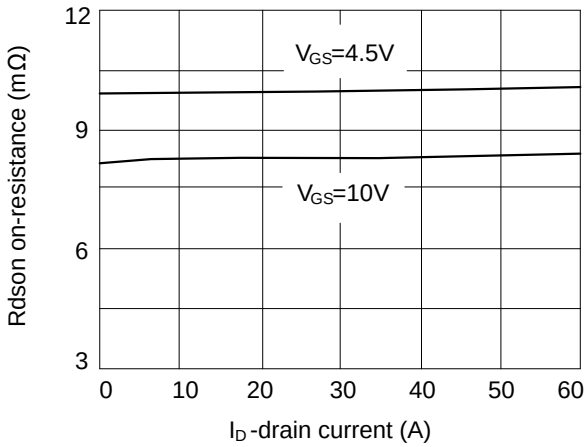


Figure 5 Rdson-drain current

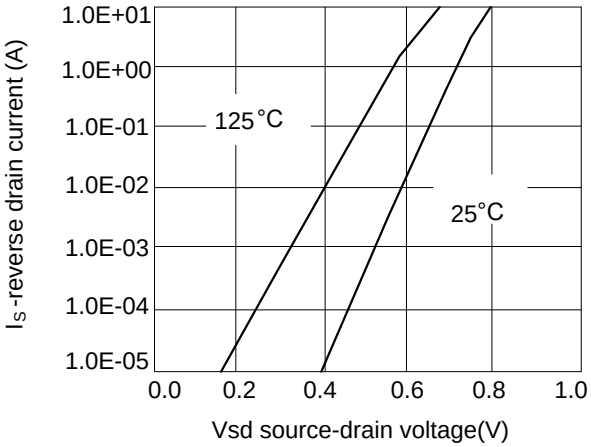


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

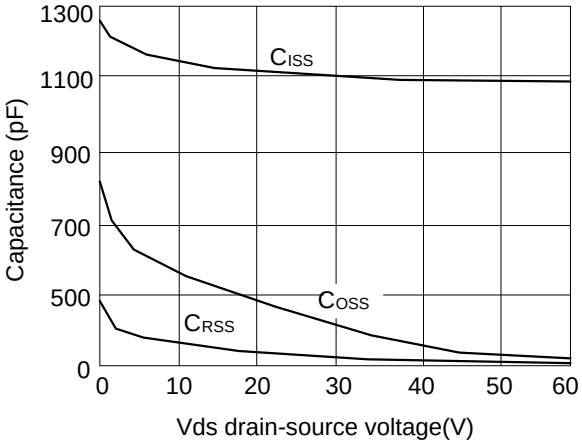


Figure 7 Capacitance vs vds

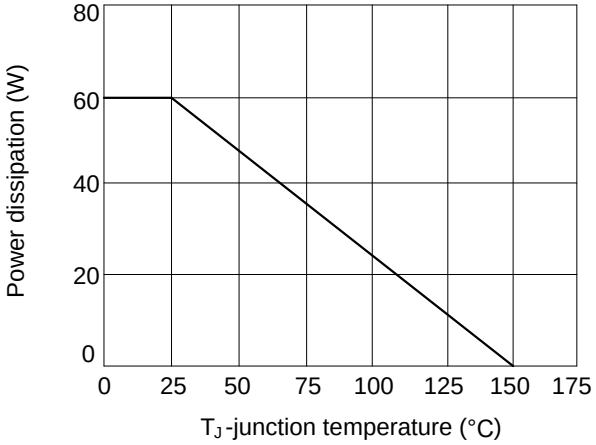


Figure 8 Power de-rating

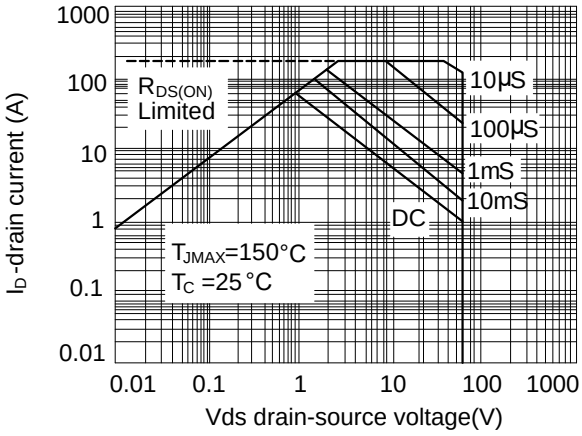


Figure 9 Safe operation area

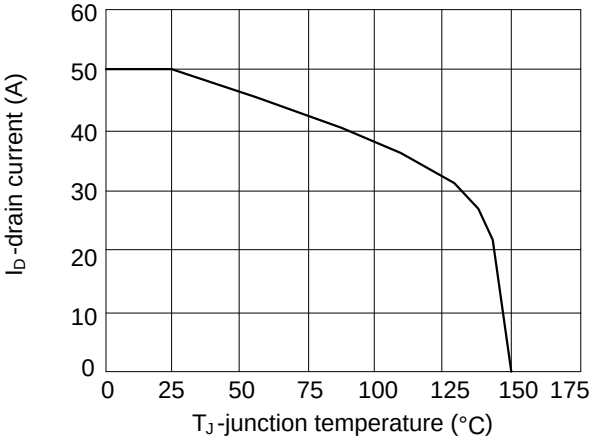
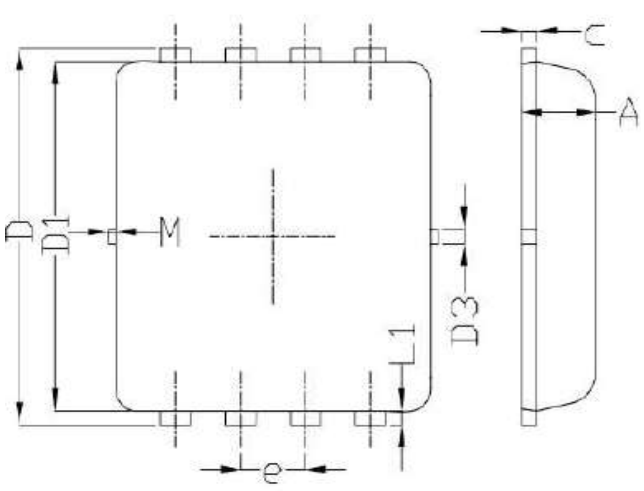
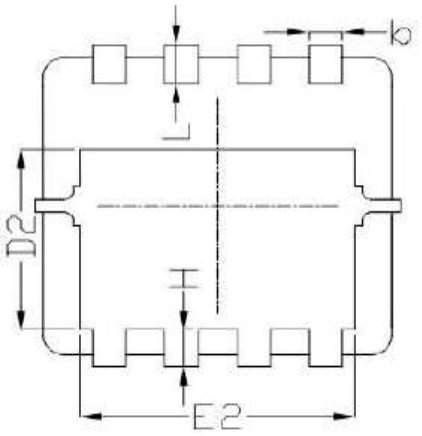
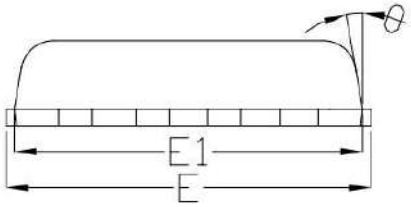


Figure 10 Current de-rating

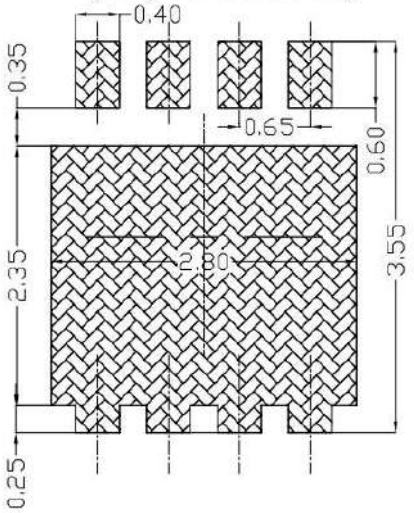
■ PDFN3X3-8L Package Mechanical Data







Land Pattern
(Only for Reference)



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			

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