

■ PRODUCT CHARACTERISTICS

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

■ 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

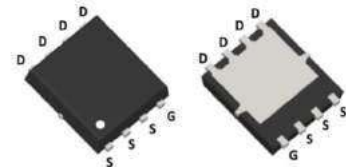
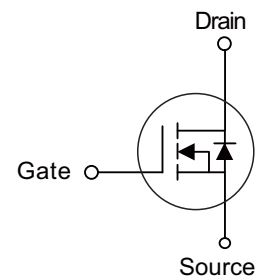
■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT6180J	PDFN3X3-8L	5000 pieces/Reel

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	$T_C=25^{\circ}C$	I_D	50	A
	$T_C=100^{\circ}C$	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	$^{\circ}C/W$
Junction Temperature		T_J	+150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 ~ +150	$^{\circ}C$

Symbol



■ ELECTRICAL CHARACTERISTICS (T =25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=25A$	-	8	9	m Ω
		$V_{GS}=4.5V, I_D=25A$	-	10	12	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=25A$	10	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V,$ $F=1.0MHz$	-	1100	-	PF
Output Capacitance	C_{oss}		-	360	-	PF
Reverse Transfer Capacitance	C_{rss}		-	19.2	-	PF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=25A$ $V_{GS}=10V, R_G=1.6\Omega$	-	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}	$T_J = 25^{\circ}C, I_F = 25A$ $di/dt = 100A/\mu s$	-	38	-	nS
Reverse Recovery Charge	Q_{rr}		-	48	-	nC

■ TYPICAL CHARACTERISTICS

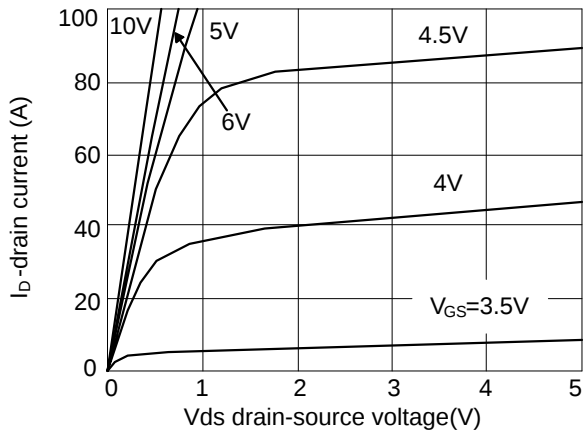


Figure 1 Output characteristics

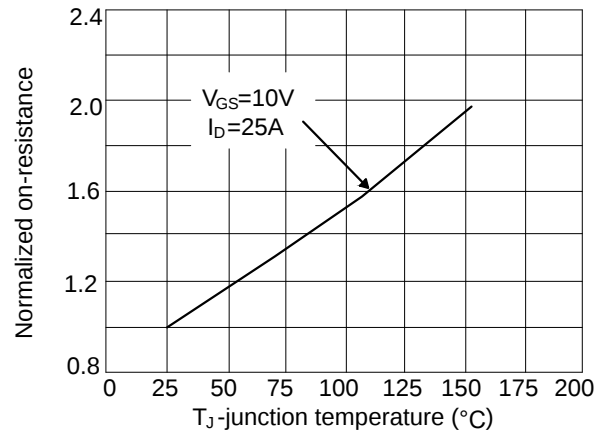


Figure 2 $R_{DS(on)}$ -junction temperature

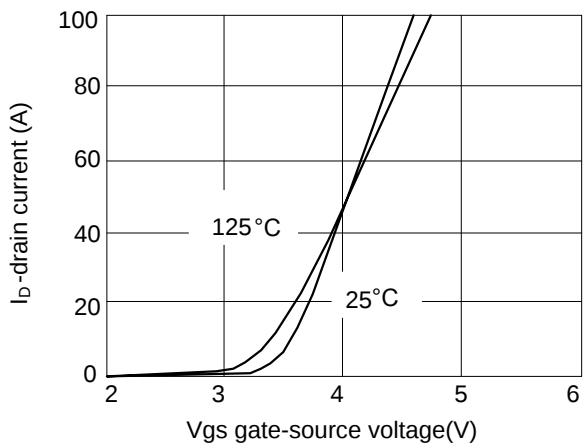


Figure 3 Transfer characteristics

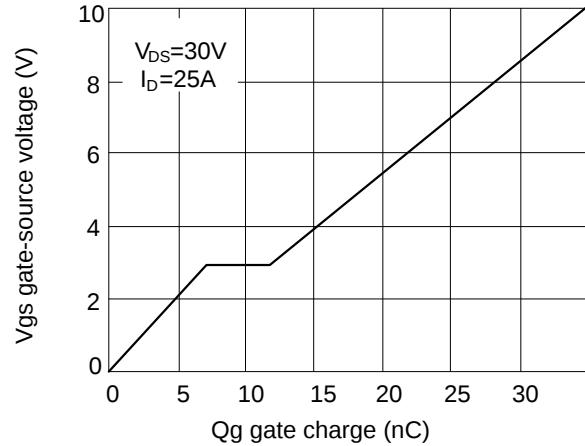


Figure 4 Gate charge

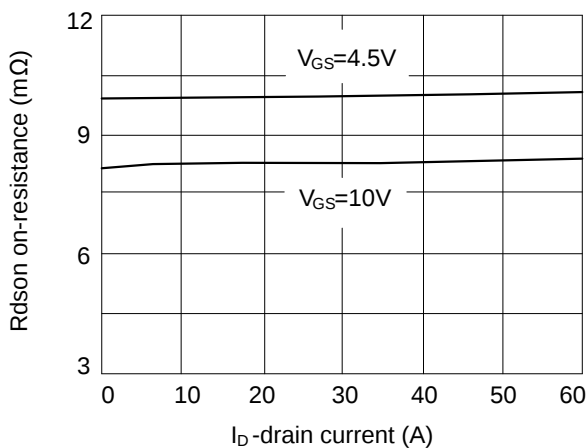


Figure 5 $R_{DS(on)}$ -drain current

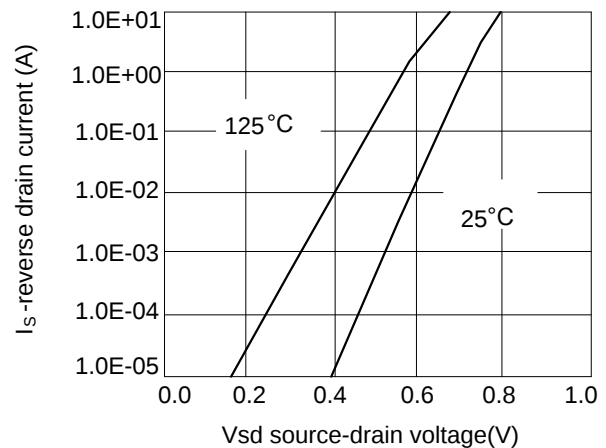


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

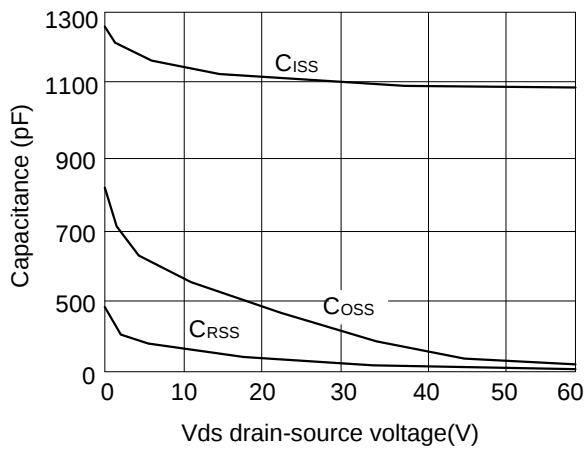


Figure 7 Capacitance vs vds

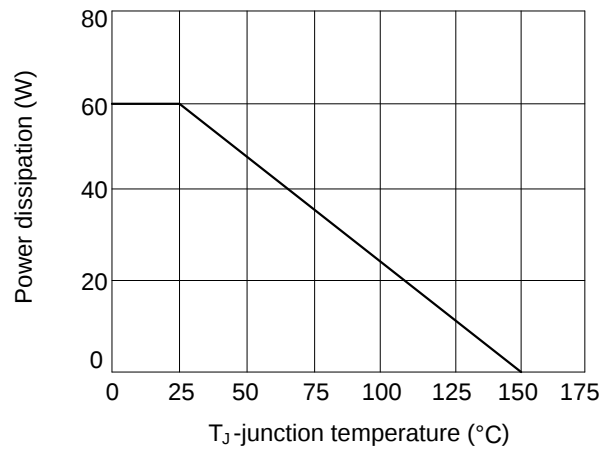


Figure 8 Power de-rating

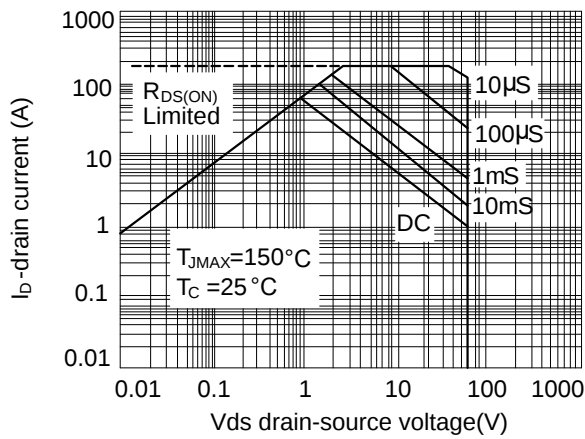


Figure 9 Safe operation area

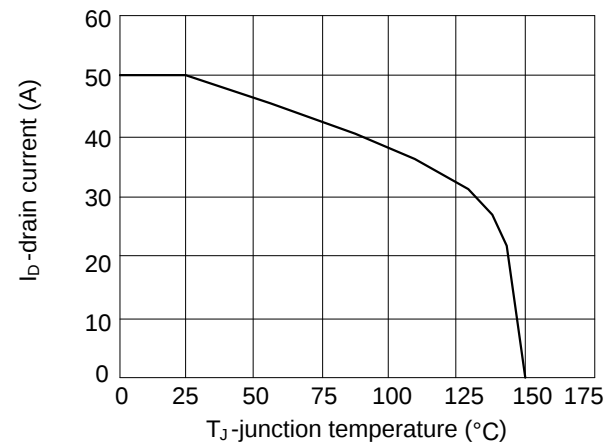
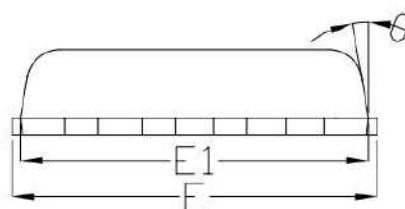
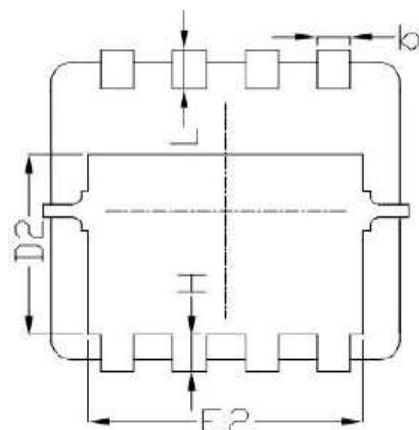
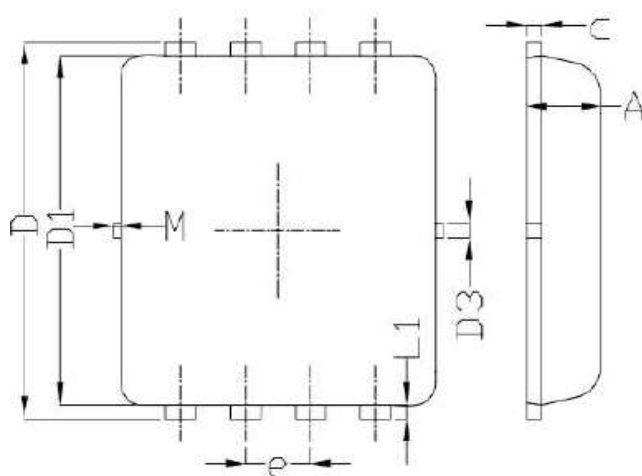
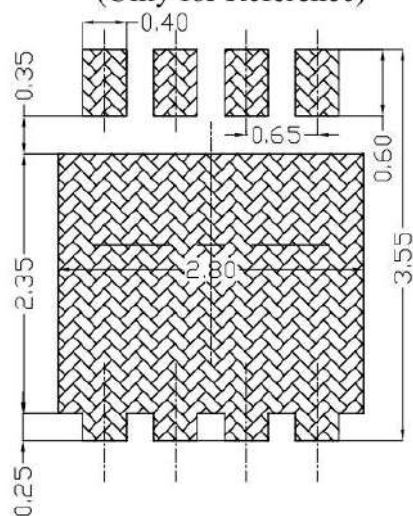


Figure 10 Current de-rating

■ PDFN3X3-8L Package Mechanical Data



Land Pattern
(Only for Reference)



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