

■ PRODUCT CHARACTERISTICS

V <sub>DSS</sub>	60V
R <sub>DS(ON)</sub> Typ(@ V <sub>GS</sub> =10V)	11mΩ
R <sub>DS(ON)</sub> Typ(@ V <sub>GS</sub> =4.5V)	15mΩ
I <sub>D</sub>	50A

■ APPLICATIONS

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

■ FEATURES

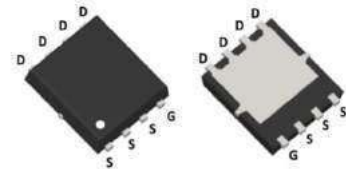
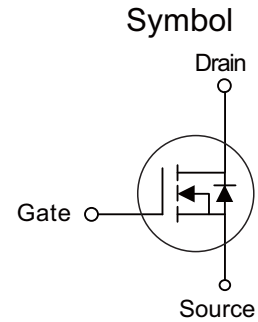
- Lower R<sub>DS(ON)</sub> to Minimize Conduction Losses
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and R<sub>g</sub> Tested

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT6514G	PDFN5X6-8L	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V <sub>DSS</sub>	60	V	
Gate-Source Voltage	V <sub>GSS</sub>	±20	V	
Drain Current	T <sub>c</sub> =25°C	I <sub>D</sub>	50	A
	T <sub>c</sub> =100°C	I <sub>D</sub>	39	A
Plused Drain Current	I <sub>DM</sub>	200	A	
Avalanche Energy	E <sub>AS</sub>	350	mJ	
Power Dissipation	P <sub>D</sub>	60	W	
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	2.1	°C/W	
Junction Temperature	T <sub>J</sub>	+150	°C	
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	°C	



**■ 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	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=25A$	-	11	14	m $\Omega$
		$V_{GS}=4.5V, I_D=25A$	-	15	19	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=25A$	10	-	-	S
Dynamic characteristics						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V,$ $F=1.0MHz$	-	865	-	PF
Output Capacitance	$C_{oss}$		-	315	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	21	-	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

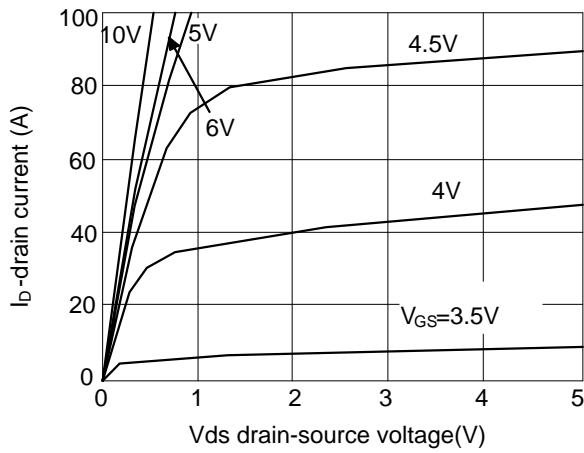


Figure 1 Output characteristics

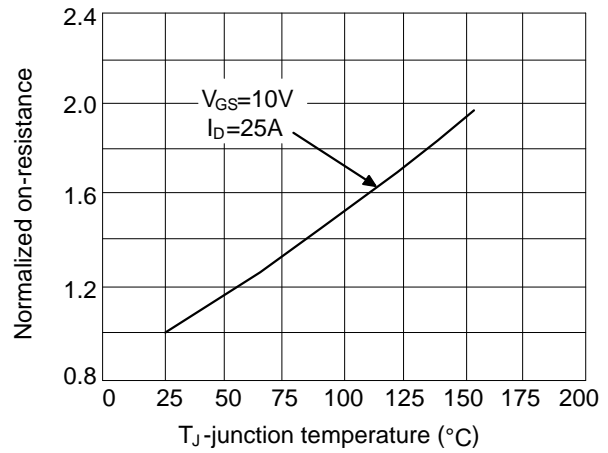


Figure 2  $R_{DS(on)}$ -junction temperature

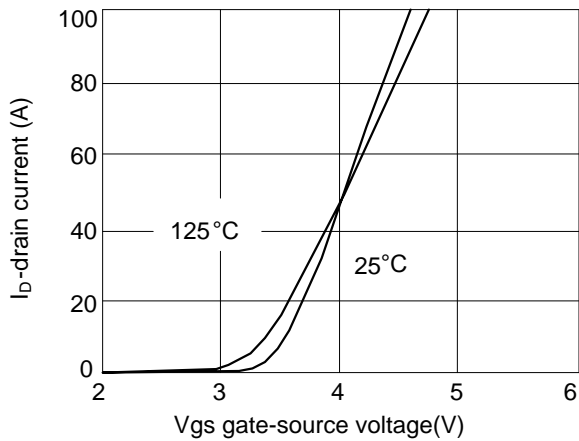


Figure 3 Transfer characteristics

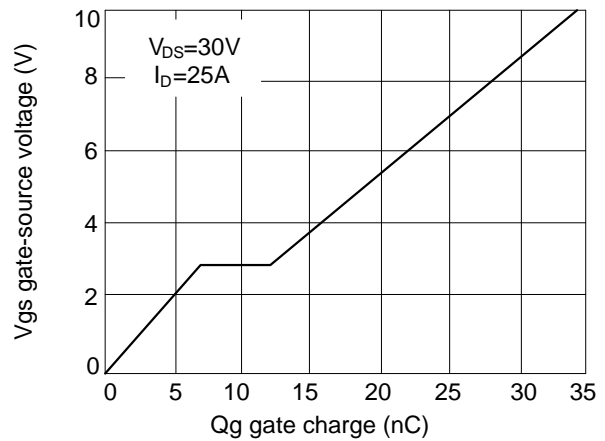


Figure 4 Gate charge

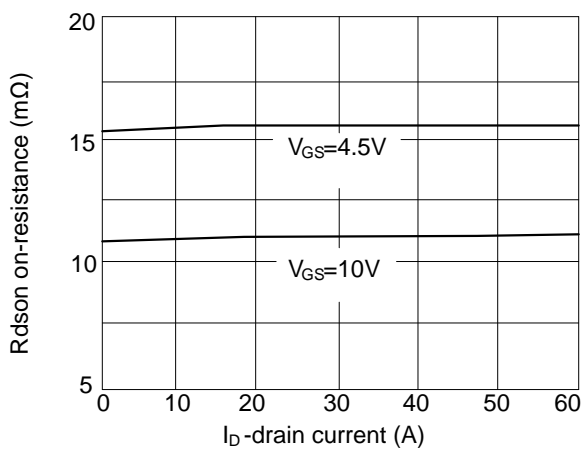


Figure 5  $R_{DS(on)}$ -drain current

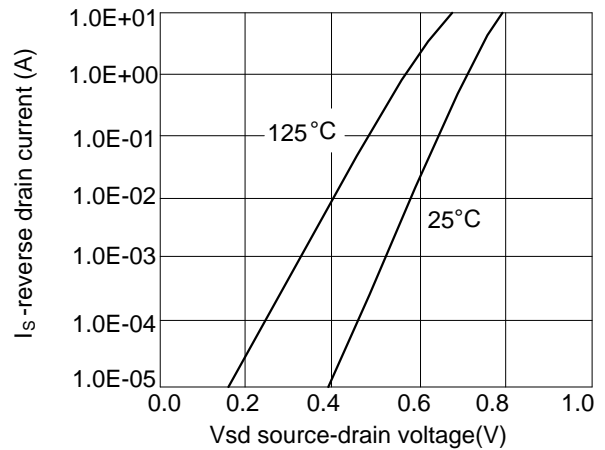


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

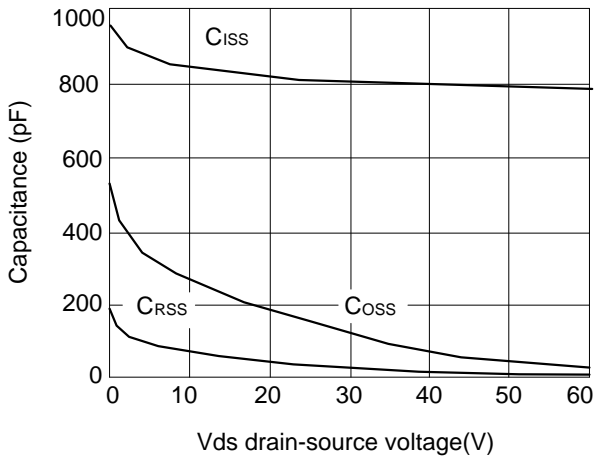


Figure 7 Capacitance vs vds

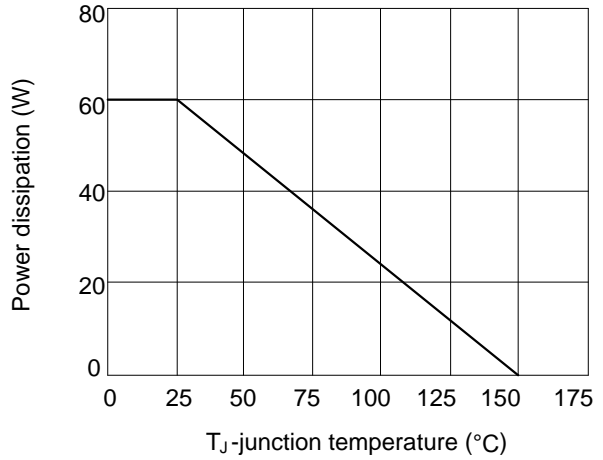


Figure 8 Power de-rating

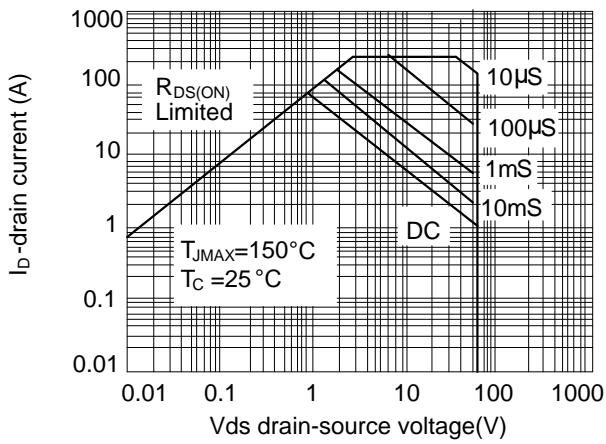


Figure 9 Safe operation area

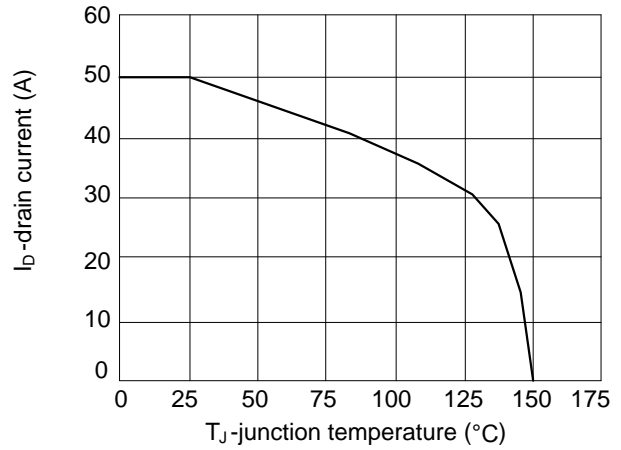
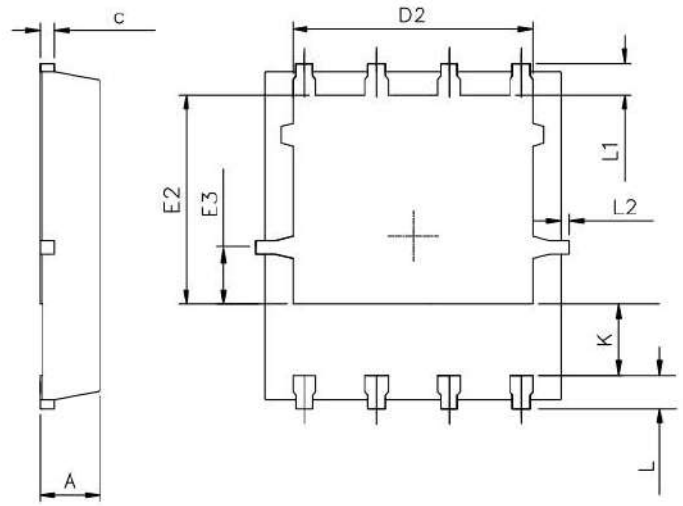
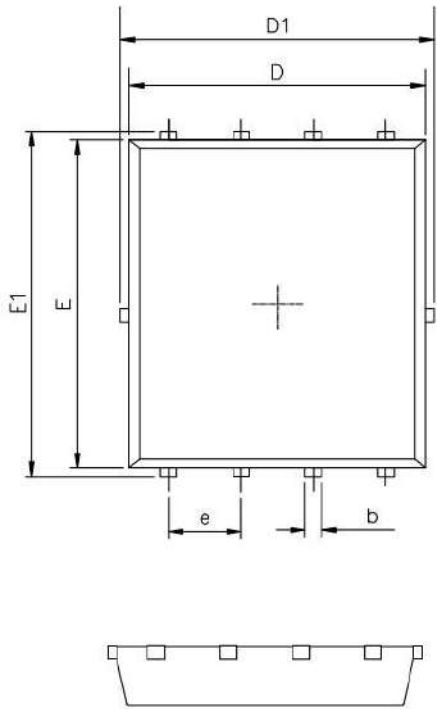
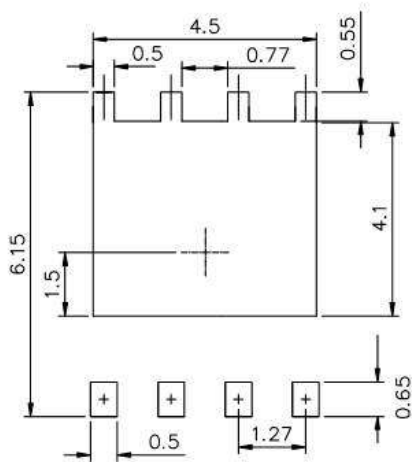


Figure 10 Current de-rating

■ 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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