

■ PRODUCT CHARACTERISTICS

V_{DS}	60V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	11m Ω
$R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$)	15m Ω
ID	50A

■ 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

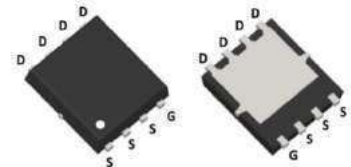
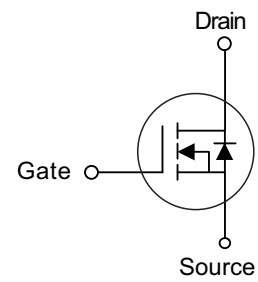
■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT6514G	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}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^{\circ}\text{C}$	I_D	50	A
	$T_C=100^{\circ}\text{C}$	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	$^{\circ}\text{C/W}$
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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 =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	-	11	14	mΩ
		V _{GS} =4.5V, I _D =25A	-	15	19	mΩ
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 =1.6Ω	-	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	-	38	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	48	-	nC

■ TYPICAL CHARACTERISTICS

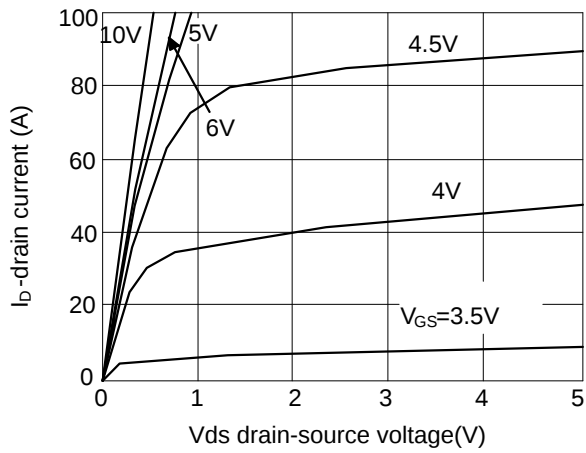


Figure 1 Output characteristics

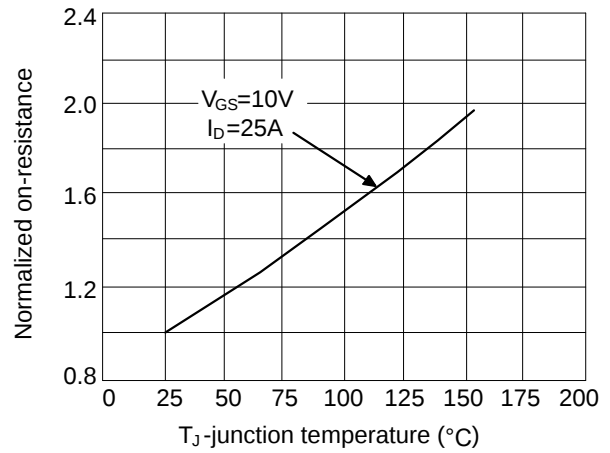


Figure 2 $R_{DS(on)}$ -junction temperature

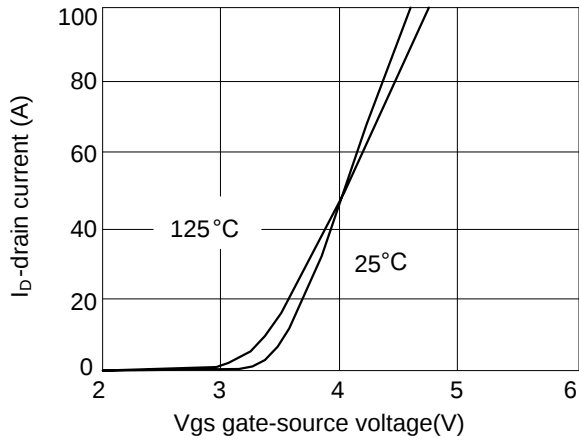


Figure 3 Transfer characteristics

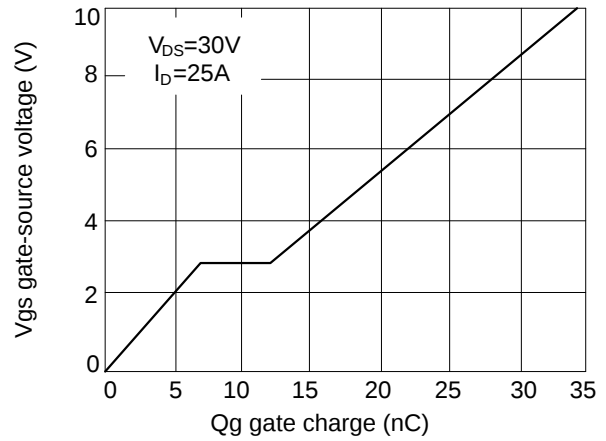


Figure 4 Gate charge

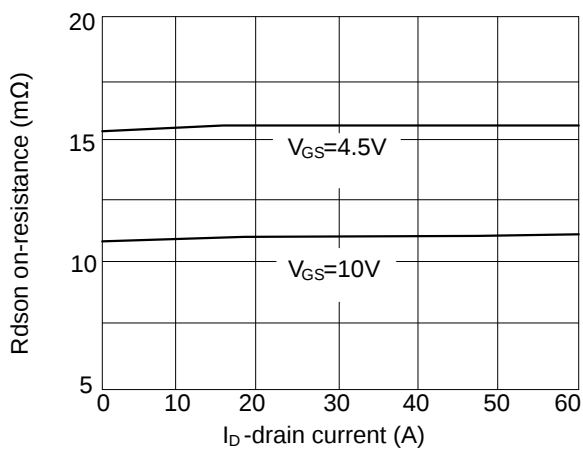


Figure 5 $R_{DS(on)}$ -drain current

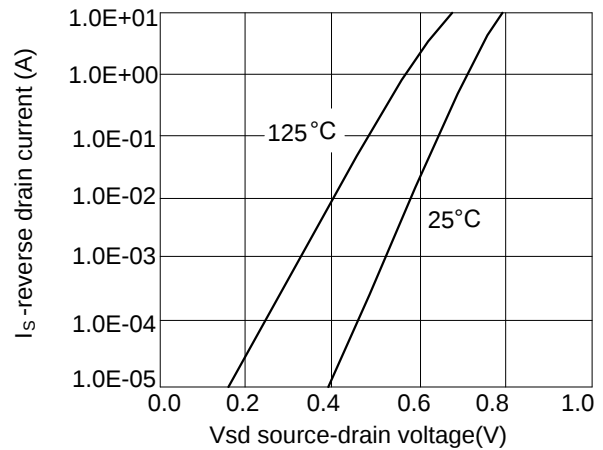


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

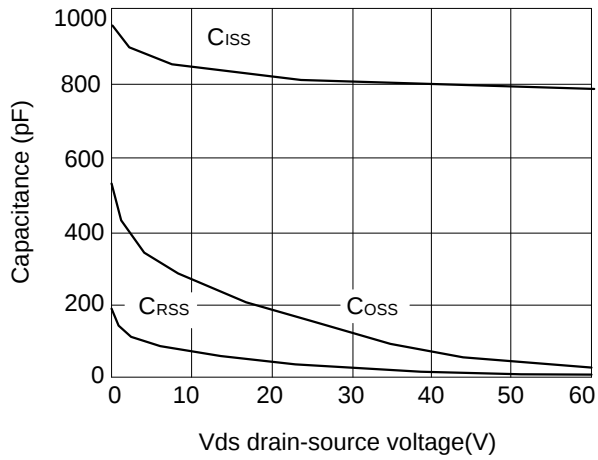


Figure 7 Capacitance vs vds

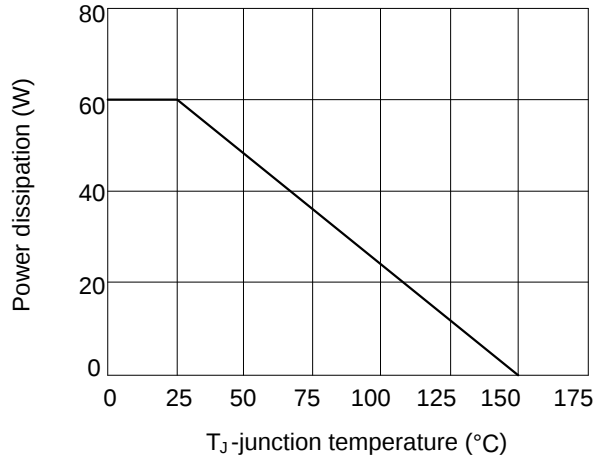


Figure 8 Power de-rating

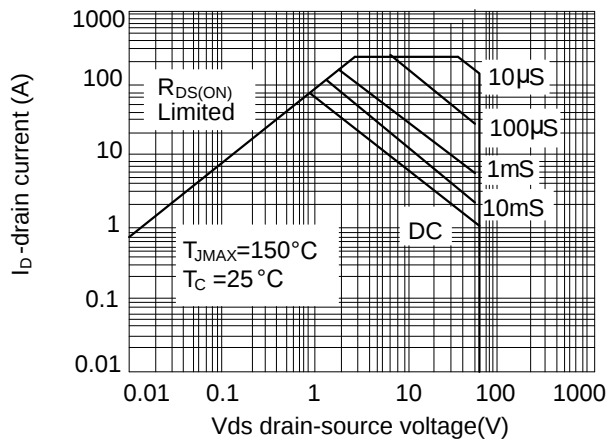


Figure 9 Safe operation area

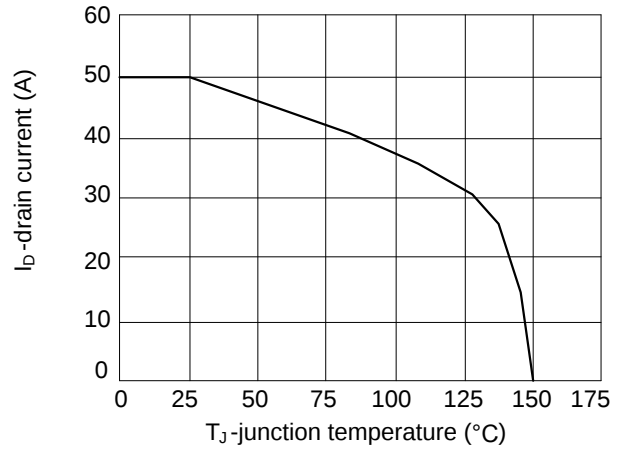
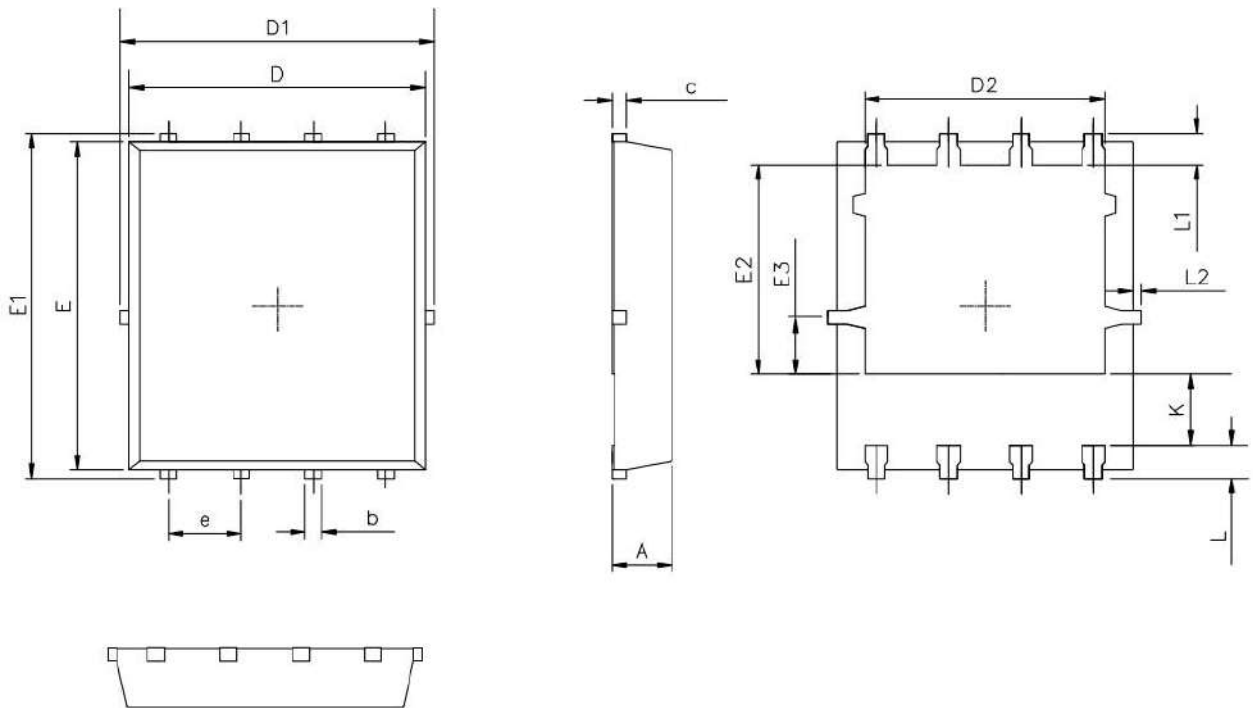
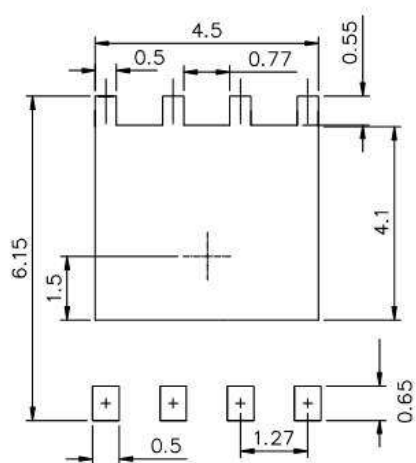


Figure 10 Current de-rating

■ 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