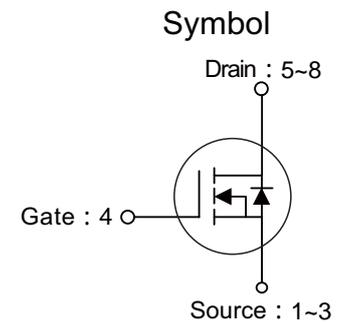


■ PRODUCT CHARACTERISTICS

V _{DSS}	60V
R _{DS(ON)} Typ(@V _{GS} =10V)	8.6mΩ
R _{DS(ON)} Typ(@V _{GS} =4.5V)	11mΩ
I _D	55A

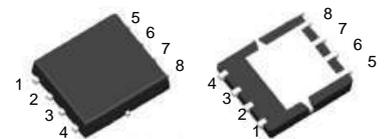


■ APPLICATIONS

- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

■ FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating



■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT6512G	PDFN5X6	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS(T_A=25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DSS}	60	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current Continuous(@V _{GS} =10V, T _A =25°C)	I _D	55	A
Drain Current Continuous(@V _{GS} =10V, T _A =100°C)	I _D	33	A
Drain Current Pulsed	I _{DM}	220	A
Avalanche Energy *	E _{AS}	156	mJ
Power Dissipation	P _D	48	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R _{thJC}	2.6	°C/W

Note: * EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25Ω

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=+20V, V_{DS}=0V$	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-20V, V_{DS}=0V$	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	8.6	10	$m\Omega$
		$V_{GS}=4.5V, I_D=15A$	-	11	13	$m\Omega$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.4	2.5	V
Dynamic characteristics						
Gate capacitance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$	-	1.7	-	Ω
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=5A$	-	16	-	S
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V$ $f=1.0MHz$	-	2400	-	pF
Output Capacitance	C_{oss}		-	172	-	pF
Reverse Transfer Capacitance	C_{rss}		-	140	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=10V, V_{DS}=30V,$ $I_D=30A, R_G=3\Omega$	-	11	-	ns
Rise Time	t_r		-	32	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	45	-	ns
Fall Time	t_f		-	10	-	ns
Total Gate Charge	Q_g	$I_D=30A, V_{DS}=30V$ $V_{GS}=10V$	-	47	-	nC
Gate to Source Charge	Q_{gs}		-	13	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	8	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	55	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	220	A
Diode Forward Voltage	V_{SD}	$I_{SD}=1A, V_{GS}=0V$	-	0.73	1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=30A, T_J=25^{\circ}\text{C}$ $di/dt=100A/\mu s$	-	27	-	ns
Reverse Recovery Charge	Q_{rr}		-	40	-	nC

■ TYPICAL CHARACTERISTICS

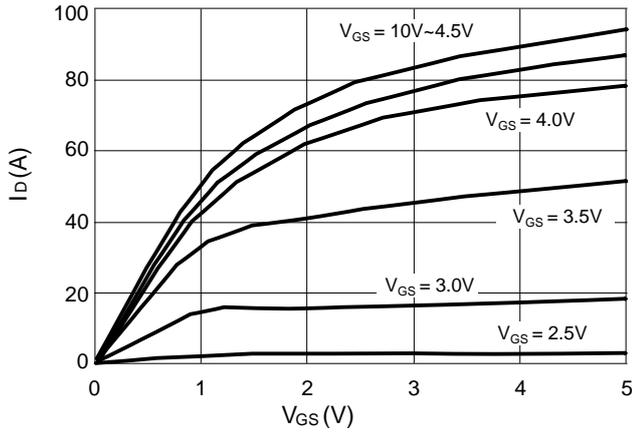


Figure 1: Output characteristics

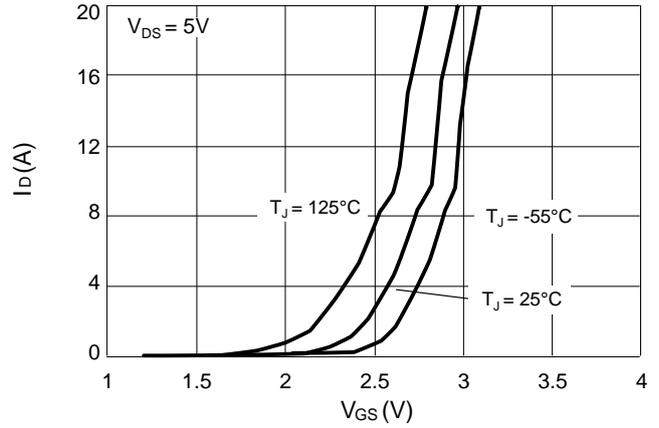


Figure 2: Transfer characteristics

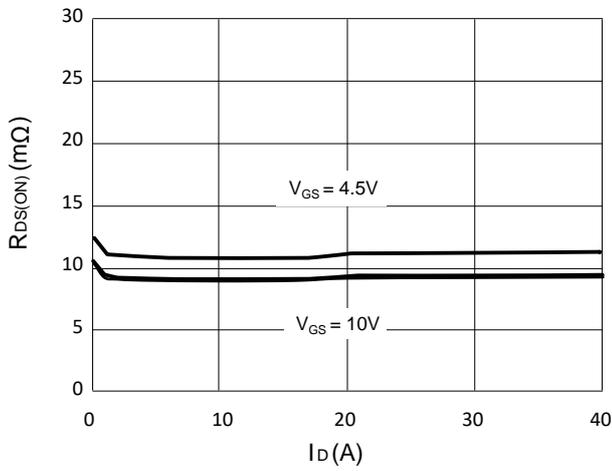


Figure 3: On-resistance vs. drain current

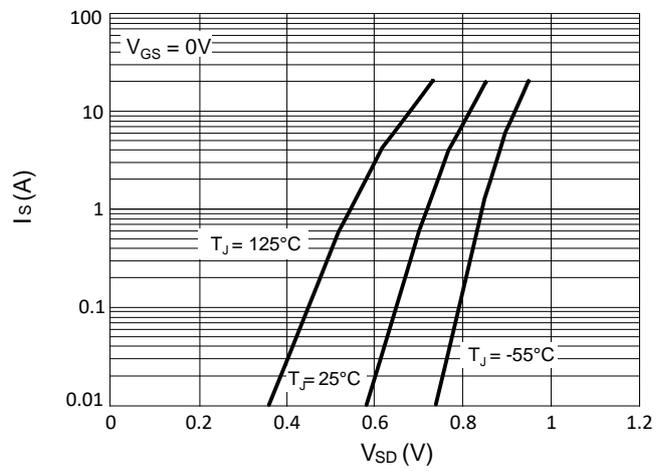


Figure 4: Body diode characteristics

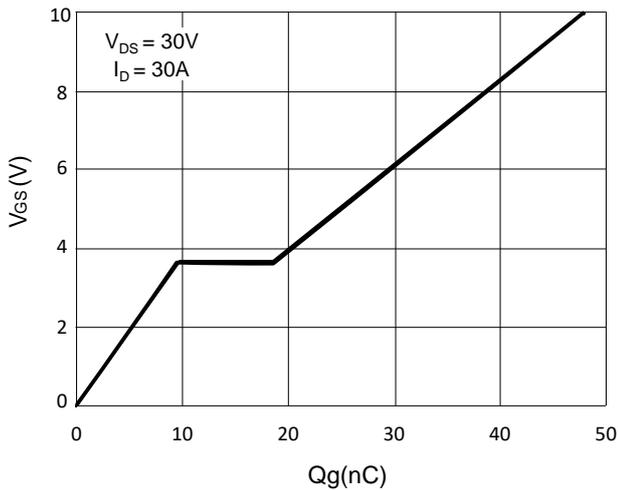


Figure 5: Gate charge characteristics

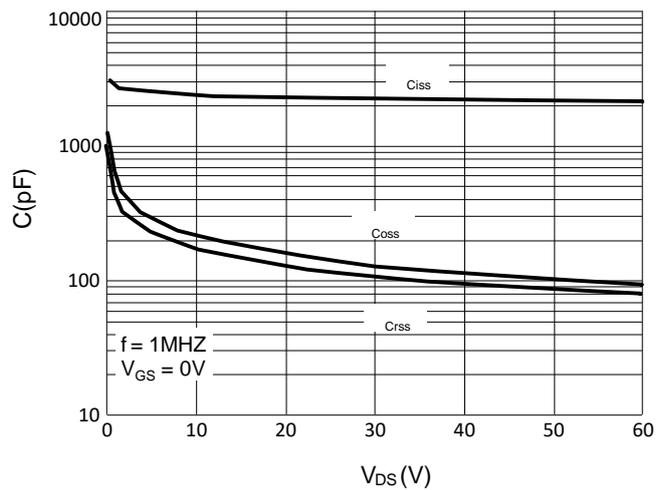


Figure 6: Capacitance characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

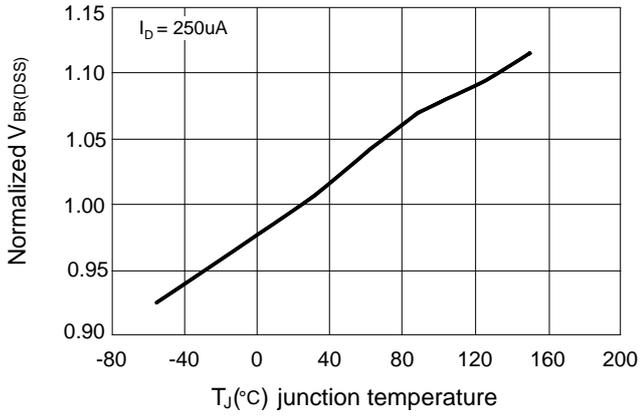


Figure 7: Normalized breakdown voltage vs. junction temperature

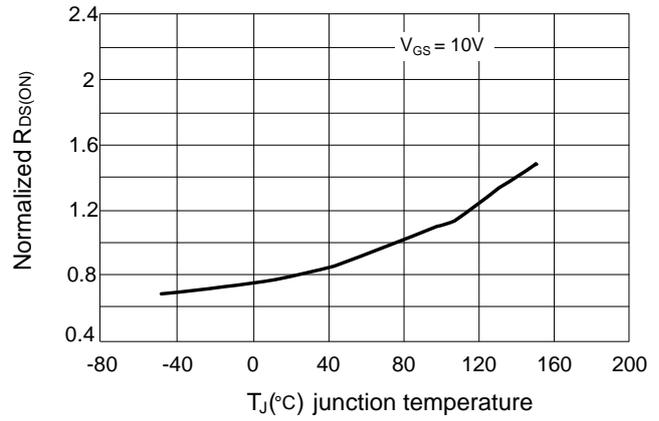


Figure 8: Normalized on-resistance vs. junction temperature

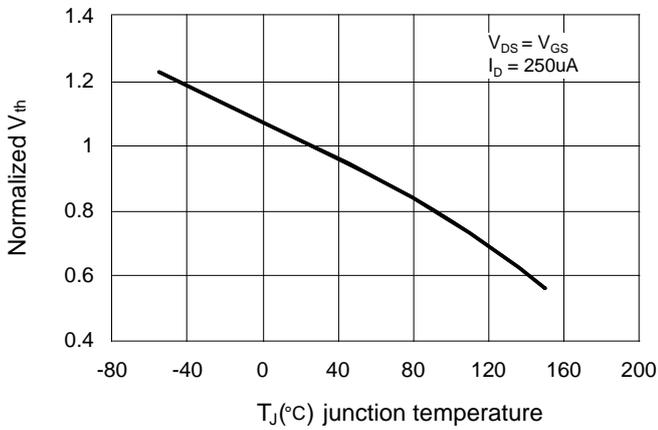


Figure 9: Normalized threshold voltage vs. junction temperature

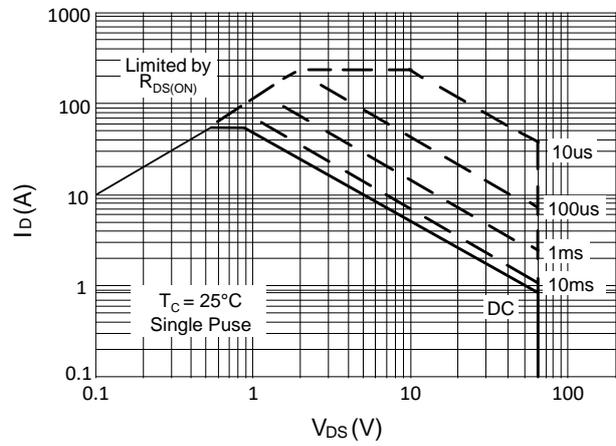
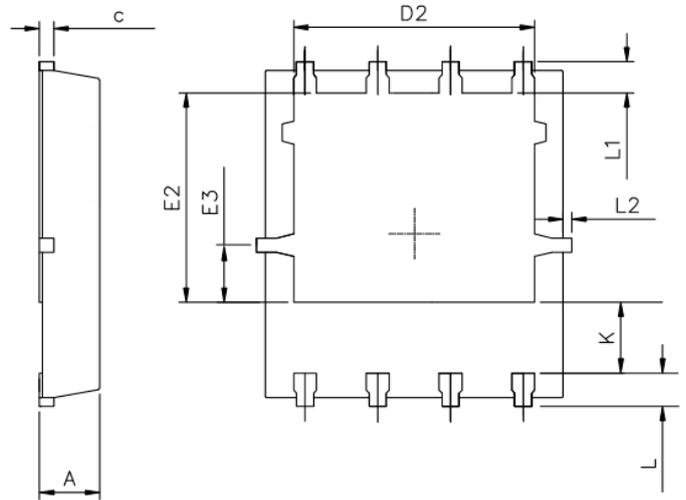
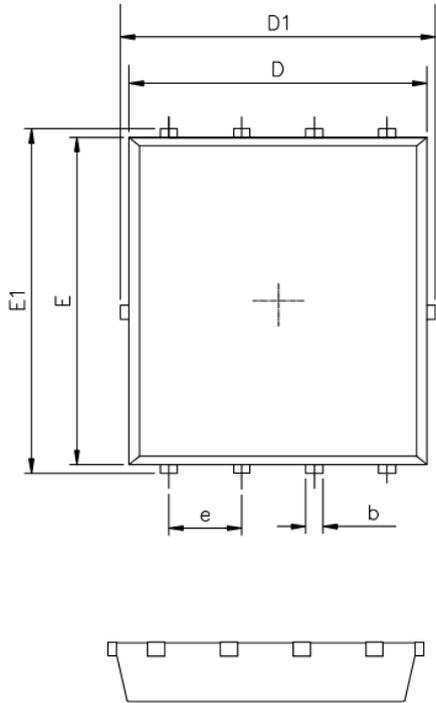
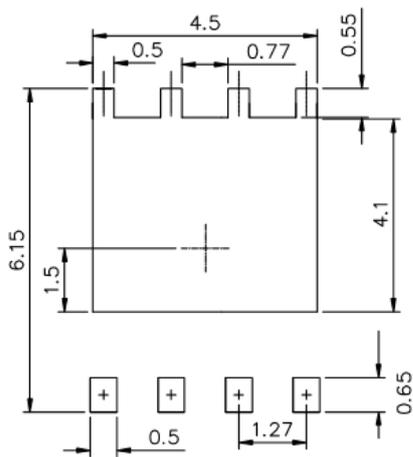


Figure 10: Maximum safe operating area

■ PDFN5X6 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