

PRODUCT CHARACTERISTICS

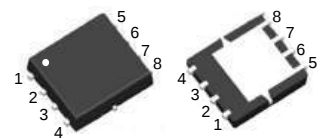
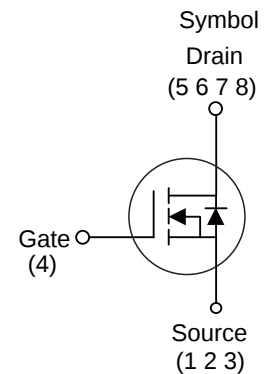
V_{DSS}	120V
$R_{DS(ON) Typ(@V_{GS}=10V)}$	6.5m Ω
$R_{DS(ON) Typ(@V_{GS}=4.5V)}$	7m Ω
I_D	90A

APPLICATIONS

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

FEATURE

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



PDFN5X6

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT5165G	PDFN5X6	5000 pieces/Reel

ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	120	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current Continuous($@V_{GS}=10V, T_A=25^{\circ}\text{C}$)	I_D	90	A
Drain Current Continuous($@V_{GS}=10V, T_A=100^{\circ}\text{C}$)	I_D	60	A
Drain Current Pulsed	I_{DM}	360	A
Avalanche Energy *	E_{AS}	520	mJ
Power Dissipation	P_D	110	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	1.13	$^{\circ}\text{C/W}$

Note: * EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=30V$, $V_G=10V$, $L=0.5mH$, $R_g=25\Omega$

■ 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 =250μA	120	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =120V,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 =20 A	-	6.5	8	mΩ
		V _{GS} =4.5V,I _D =20 A	-	7	9	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.6	3	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	2.6	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V,I _D =3A	11	-	-	S
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V f=1.0MHz	-	4800	-	pF
Output Capacitance	C _{oss}		-	1500	-	pF
Reverse Transfer Capacitance	C _{rss}		-	238	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =60V, I _D =45 A ,R _G =4.7Ω	-	15	-	ns
Rise Time	t _r		-	70	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	40	-	ns
Fall Time	t _f		-	9	-	ns
Total Gate Charge	Q _g	I _D =45 A, V _{DS} =60V V _{GS} =10V	-	75.5	-	nC
Gate to Source Charge	Q _{gs}		-	21.3	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	8.1	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	90	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	360	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.69	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =45 A, T _j =25 °C dI/dt=100A/μs	-	56	-	ns
Reverse Recovery Charge	Q _{rr}		-	130	-	nC

■ TYPICAL CHARACTERISTICS

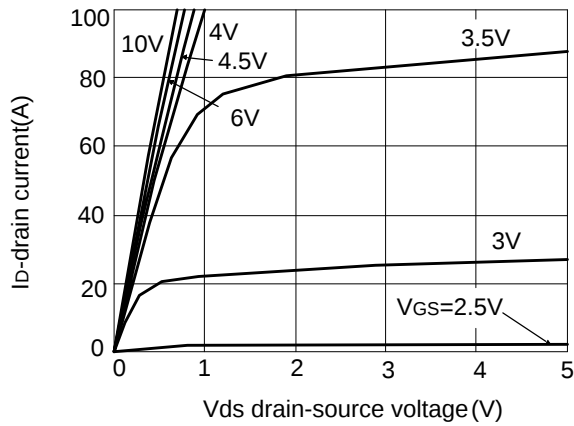


Figure.1 Output characteristics

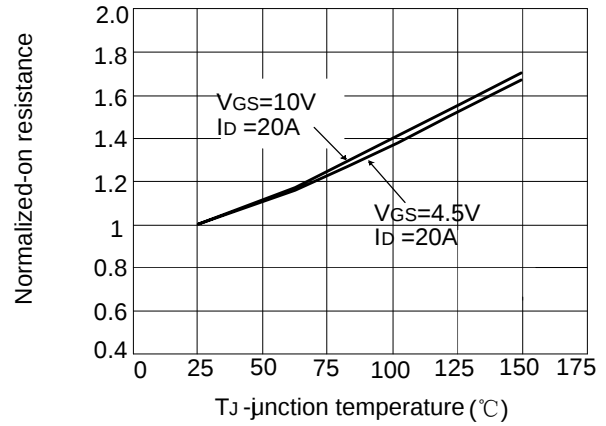


Figure.2 $R_{DS(on)}$ -junction temperature

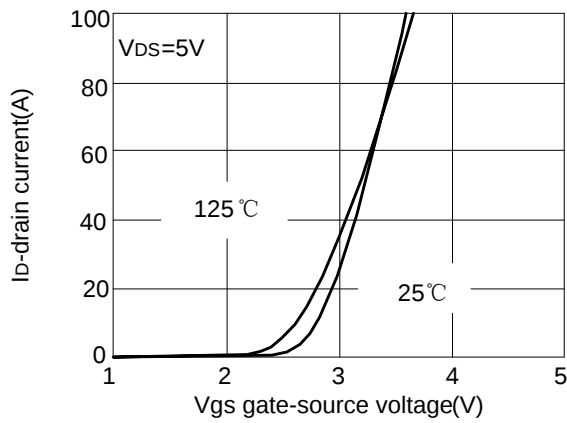


Figure.3 Transfer characteristics

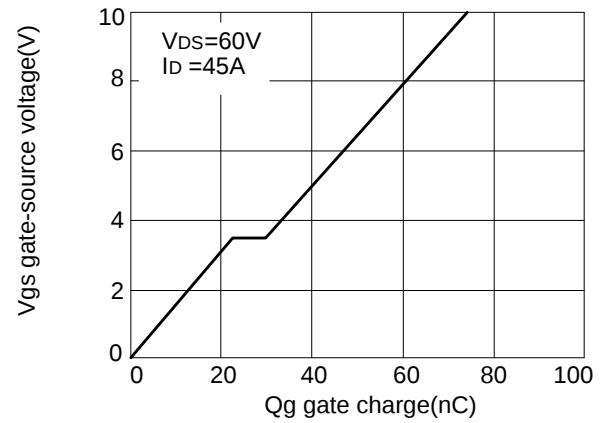


Figure.4 Gate charge

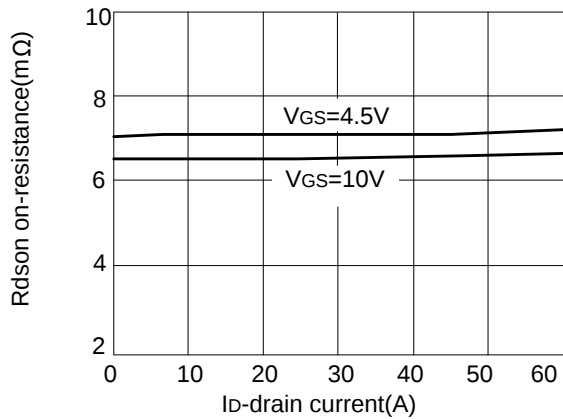


Figure.5 $R_{DS(on)}$ -drain current

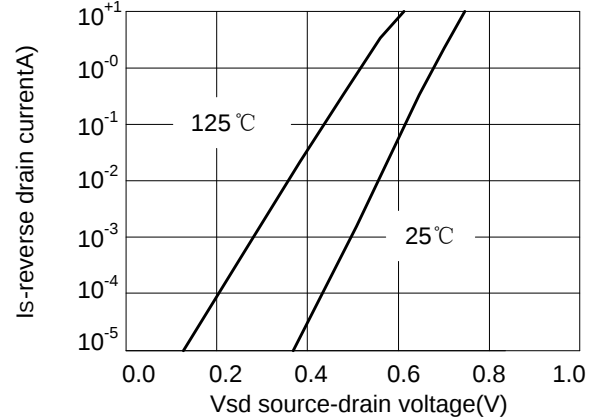


Figure.6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

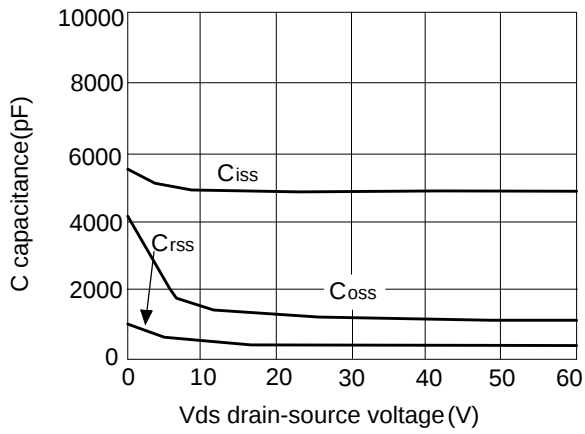


Figure.7 Capacitance vs vds

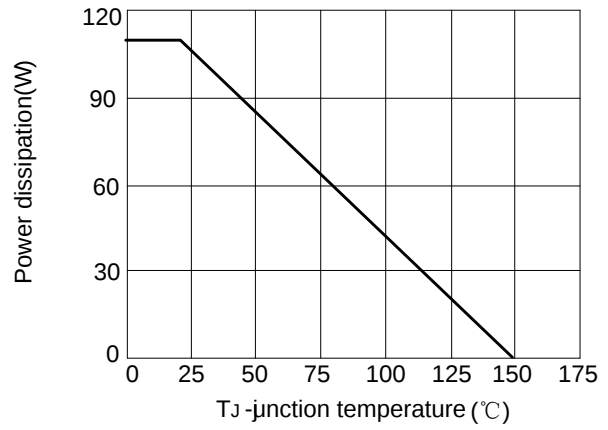


Figure.8 Power de-rating

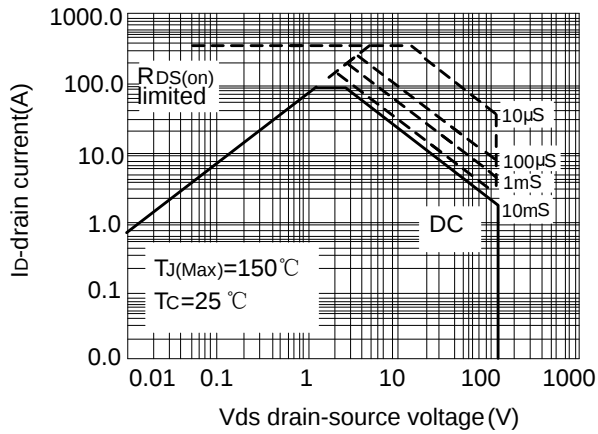


Figure.9 Safe operation area

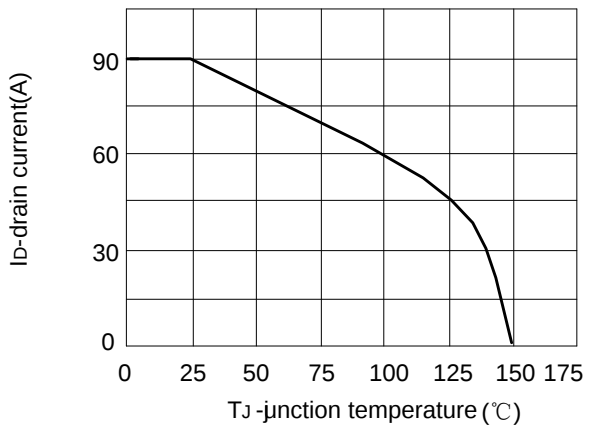
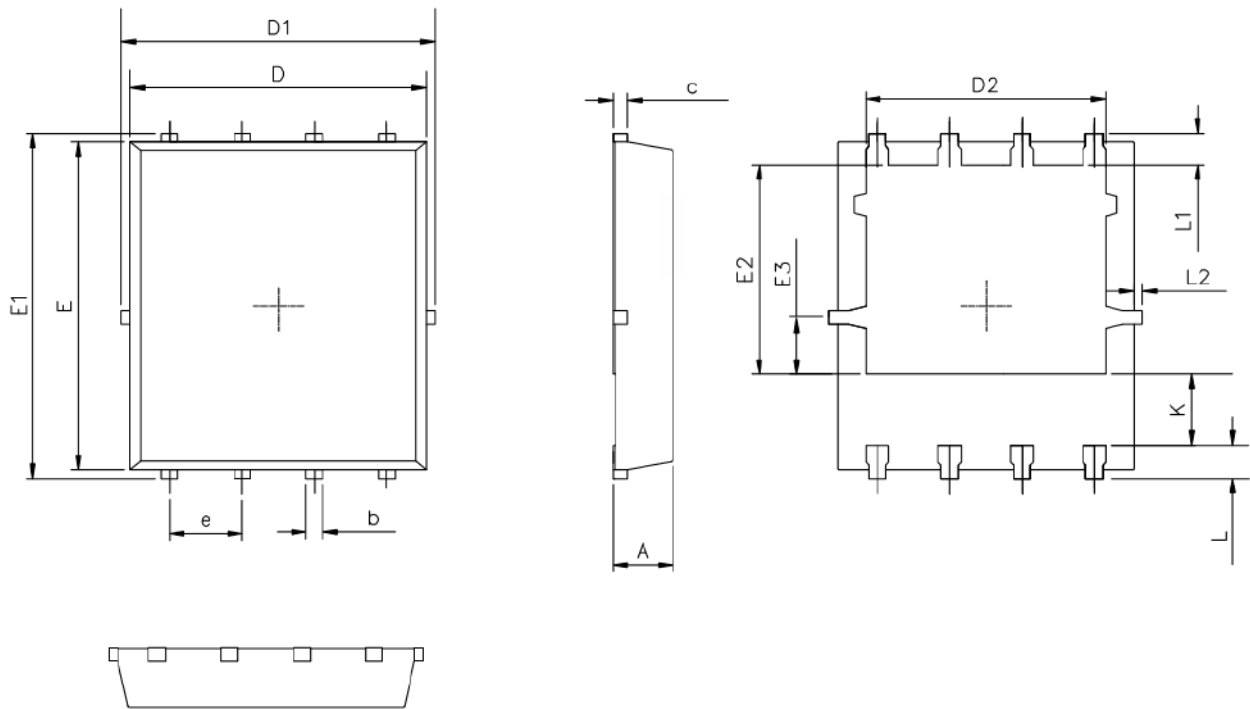
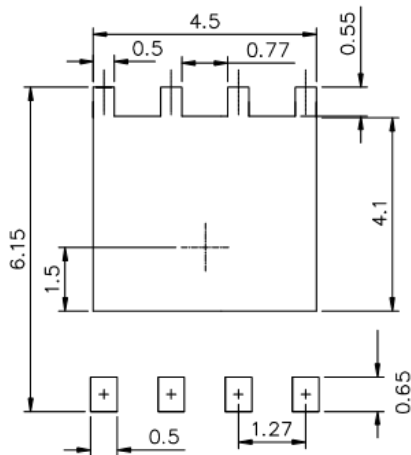


Figure.10 Id current-junction temperature

■ PDFN5X6 PACKAGE OUTLINE DIMENSIONS



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