

PRODUCT CHARACTERISTICS

V_{DS}	40V
$R_{DS(ON)} Typ(@V_{GS}=10V)$	4.5mΩ
$R_{DS(ON)} Typ(@V_{GS}=4.5V)$	7.1mΩ
I_D	80A

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	MOT4145G	PDFN5X6	5000 pieces/Reel

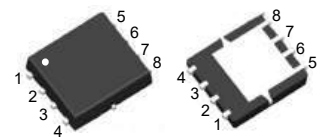
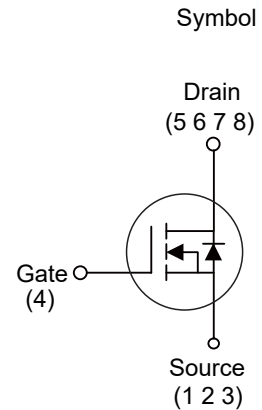
ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current Continuous($@V_{GS}=10V, T_c=25^{\circ}C$)	I_D	80	A
Drain Current Continuous($@V_{GS}=10V, T_c=100^{\circ}C$)	I_D	56	A
Drain Current Pulsed	I_{DM}	320	A
Avalanche Energy *	E_{AS}	110	mJ
Power Dissipation	P_D	60	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	2.01	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$



PDFN5X6

■ 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	40	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =40V, 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	-	4.5	5.8	mΩ
		V _{GS} =4.5V, I _D =20 A	-	7.1	8.6	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	4.1	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =5A	-	15	-	S
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V f=1.0MHz	-	901	-	pF
Output Capacitance	C _{oss}		-	503	-	pF
Reverse Transfer Capacitance	C _{rss}		-	5.1	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =20V, I _D =20 A ,R _G =3Ω	-	7	-	ns
Rise Time	t _r		-	3.3	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	14.8	-	ns
Fall Time	t _f		-	3.8	-	ns
Total Gate Charge	Q _g	I _D =20 A, V _{DS} =20V V _{GS} =10V	-	10.3	-	nC
Gate to Source Charge	Q _{gs}		-	2.3	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	2.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	80	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	320	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.7	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _j =25 °C dI /dt=100A/μs	-	18	-	ns
Reverse Recovery Charge	Q _{rr}		-	6.7	-	nC

■ TYPICAL CHARACTERISTICS

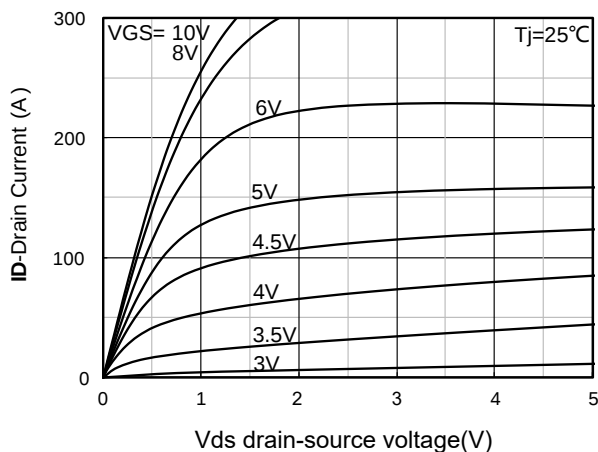


Figure 1: Output characteristics

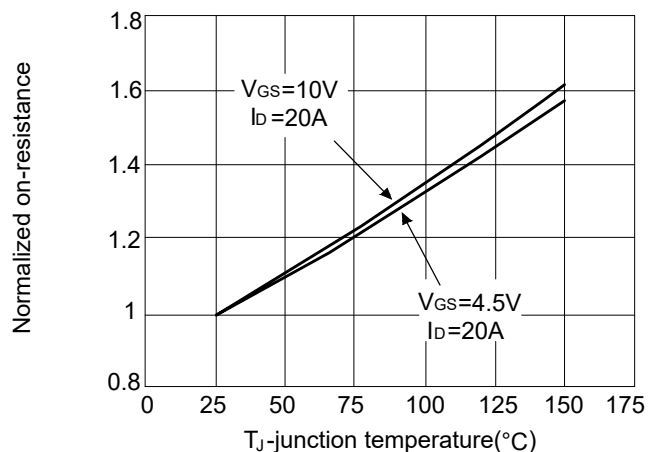


Figure 4: Rdson-junction temperature

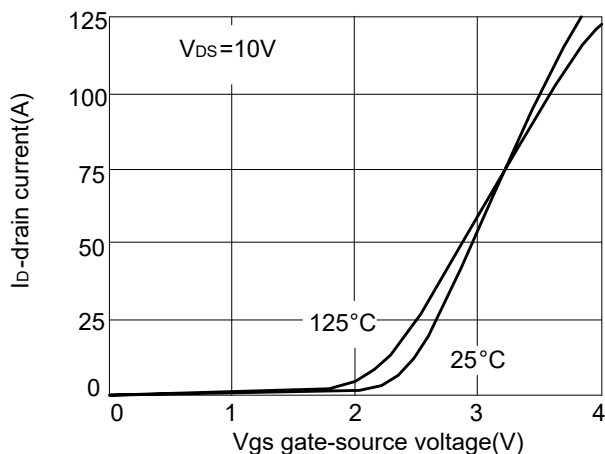


Figure 3: Transfer characteristics

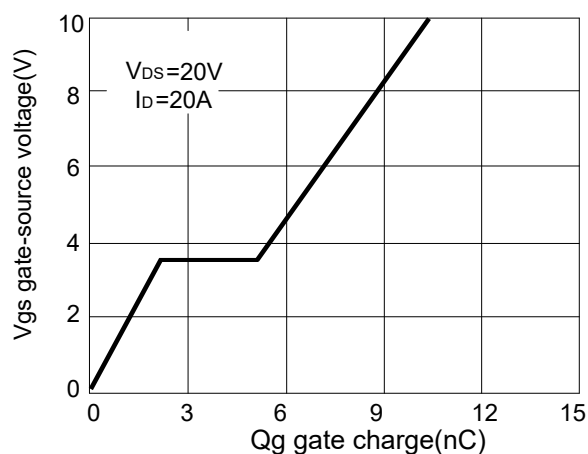


Figure 4: Gate charge

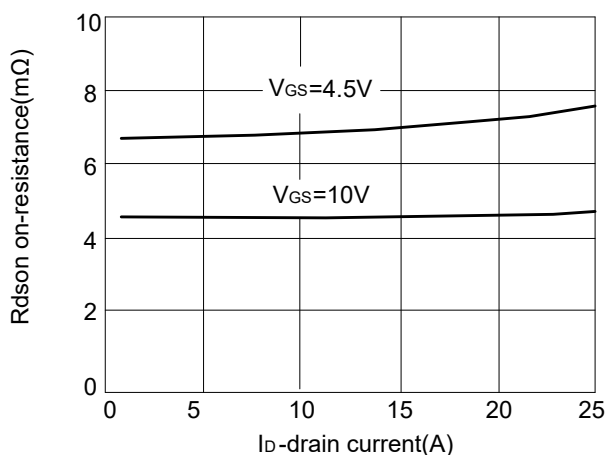


Figure 5: Rdson-drain current

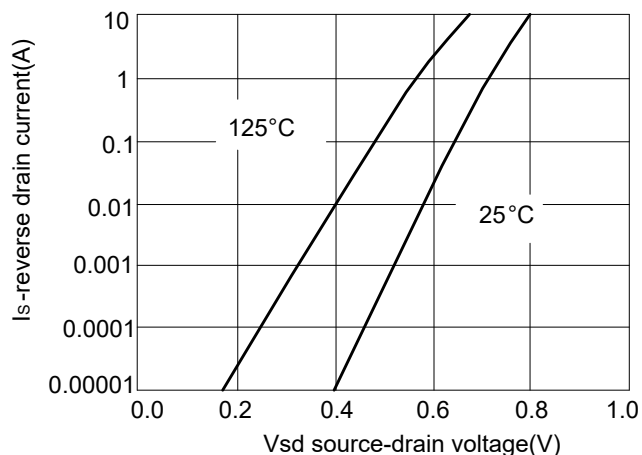


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

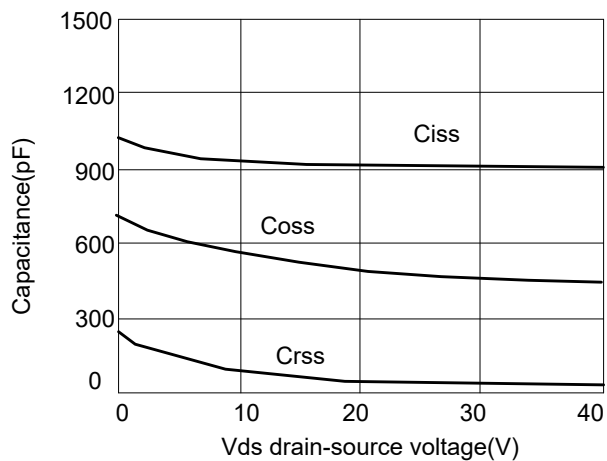


Figure 7: Capacitance vs vds

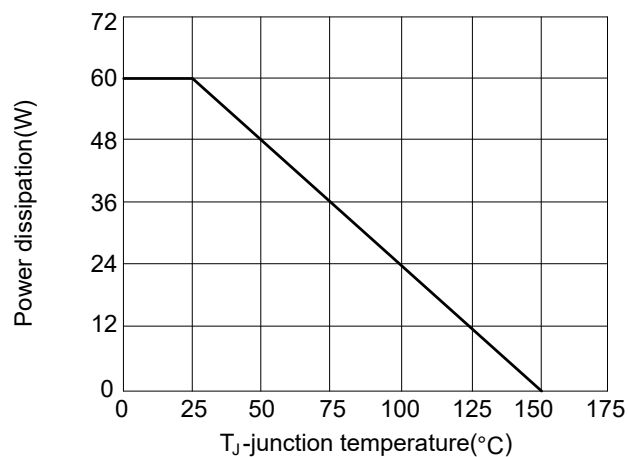


Figure 8: Power de-rating

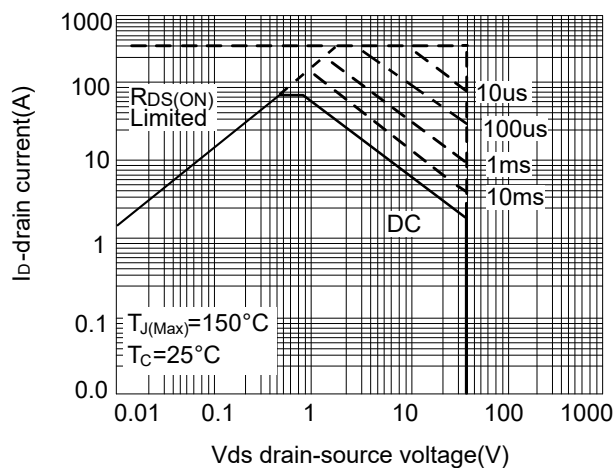


Figure 9: Safe operation area

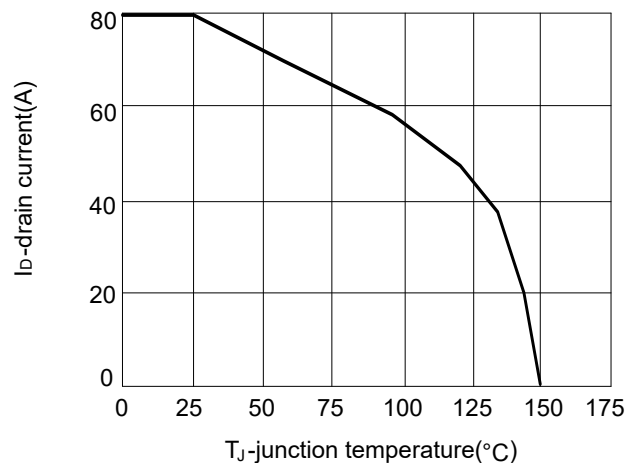
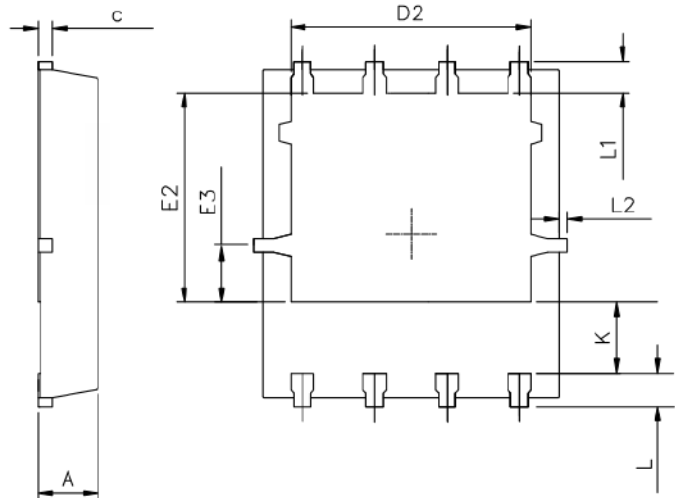
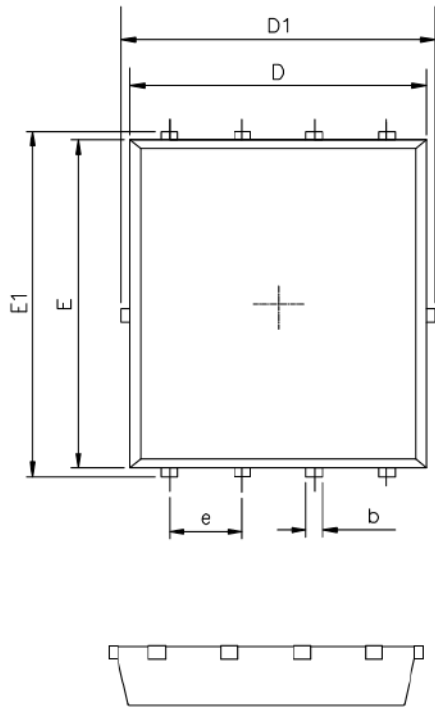
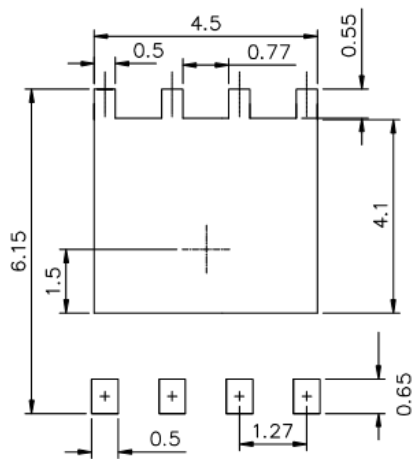


Figure 10: Current de-rating

■ PDFN5X6 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