

PRODUCT CHARACTERISTICS

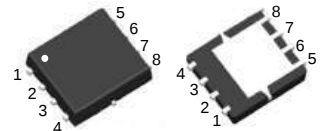
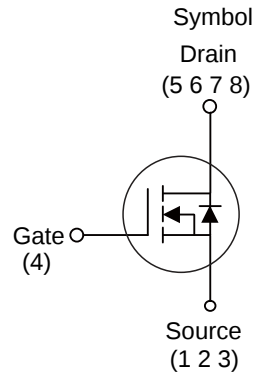
V_{DSS}	100V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	4.3m Ω
I_D	125A

APPLICATIONS

- * Motor Control
- * High Performance SMPS
- * DC/DC Converter

FEATURE

- * Low Gate Charge
- * Ultra-low $R_{DS(ON)}$



PDFN5X6

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT1142HG	PDFN5X6	5000 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current Continuous(@ $V_{GS}=10V, T_A=25^{\circ}C$)	I_D	125	A
Drain Current Pulsed	I_{DM}	500	A
Avalanche Energy *	E_{AS}	552	mJ
Power Dissipation	P_D	150	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}	0.83	$^{\circ}C/W$

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

■ 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	100	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
Gate to Source Forward Leakage	I _{GSS(F)}	V _{DS} =0V, V _{GS} =+20V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{DS} =0V, V _{GS} =-20V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	4.3	4.9	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	1.3	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3 A	-	12	-	S
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V f=1.0MHz	-	4600	-	pF
Output Capacitance	C _{oss}		-	1700	-	pF
Reverse Transfer Capacitance	C _{rss}		-	197	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =20A, V _{DS} =50V R _G =3Ω ,V _{GS} =10V	-	21	-	ns
Rise Time	t _r		-	13	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	40	-	ns
Fall Time	t _f		-	12	-	ns
Total Gate Charge	Q _g	I _D =20A, V _{DS} =50V V _{GS} =10V	-	93	-	nC
Gate to Source Charge	Q _{gs}		-	21	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	27	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _S		-	-	125	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	500	A
Diode Forward Voltage	V _{SD}	I _{SD} =3A, V _{GS} =0V	-	0.75	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _J =25 °C	-	68	-	ns
Reverse Recovery Charge	Q _{rr}	dI /dt=100A/μs	-	115	-	nC

TYPICAL CHARACTERISTICS

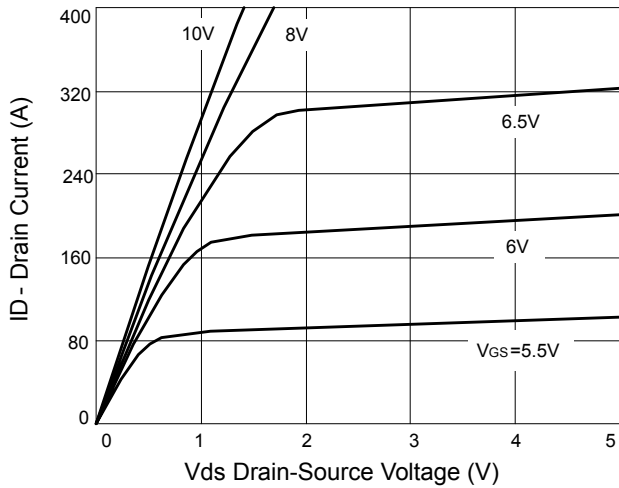


Figure 1 Output characteristics

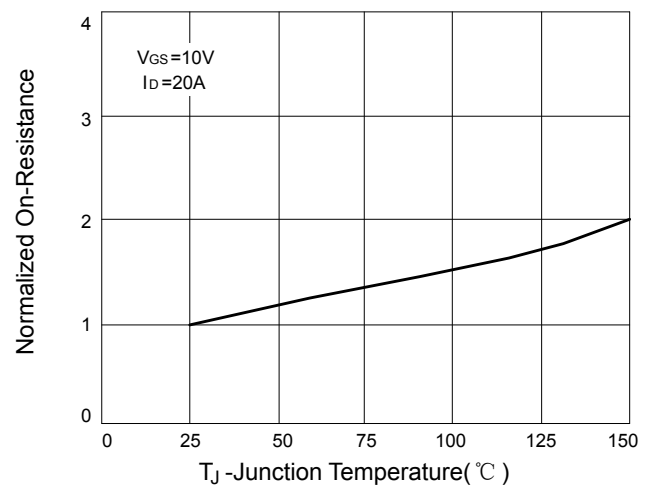


Figure 2 $R_{DS(on)}$ -junction temperature

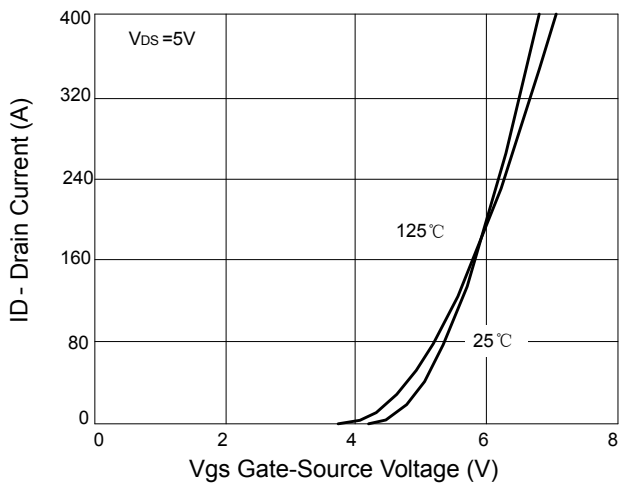


Figure 3 Transfer characteristics

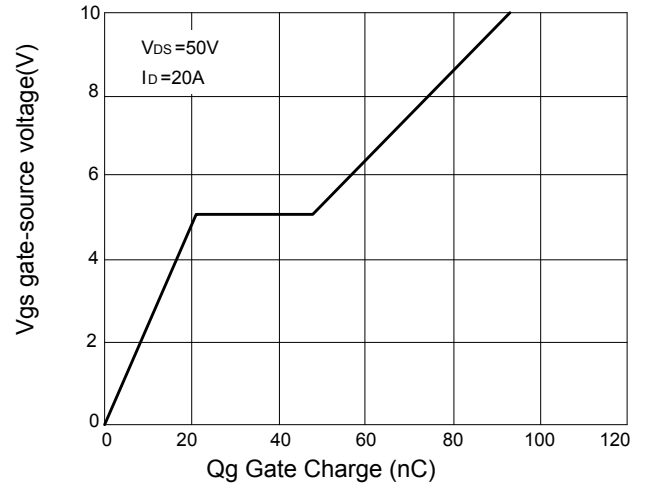


Figure 4 Gate charge

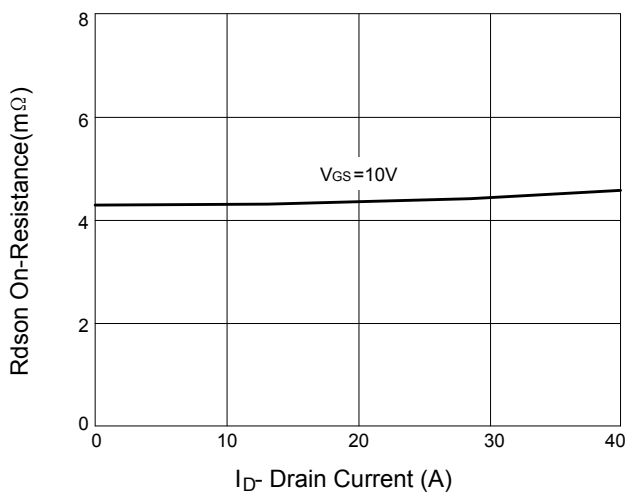


Figure 5 $R_{DS(on)}$ -drain current

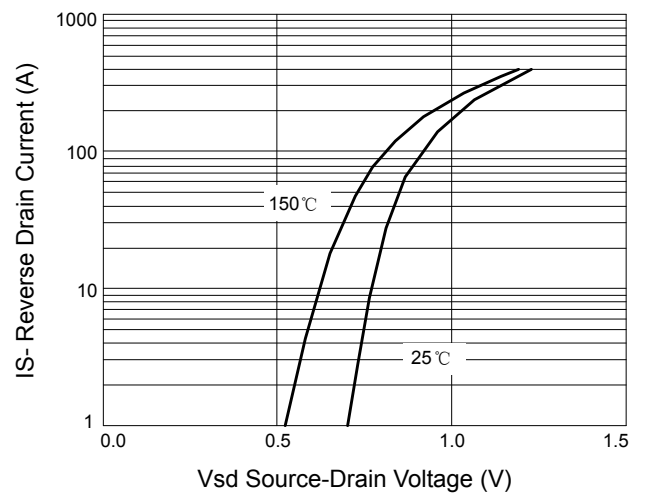


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

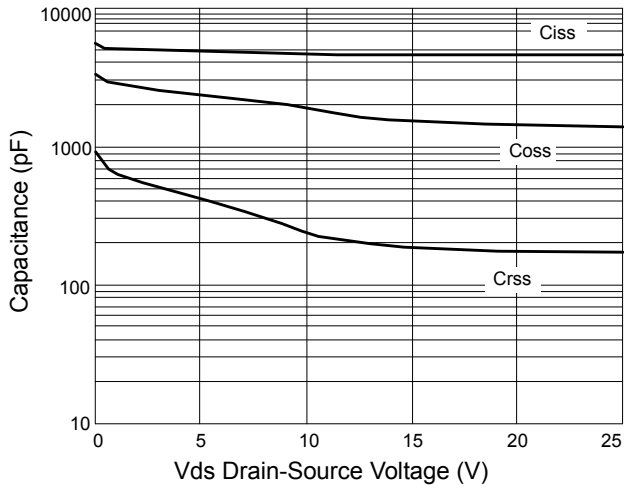


Figure 7 Capacitance vs. vds

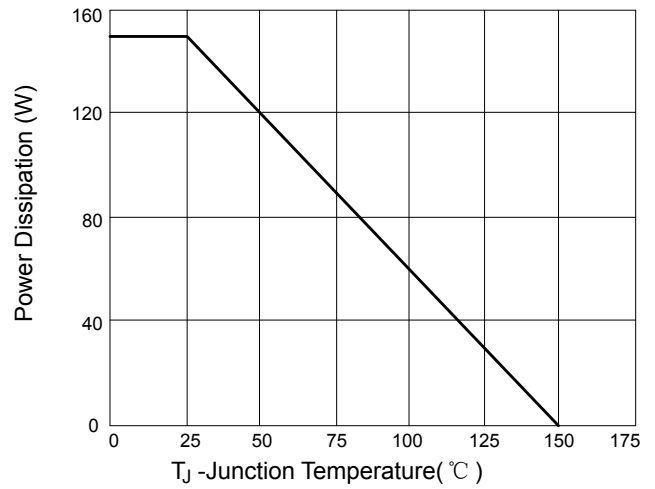


Figure 8 Power de-rating

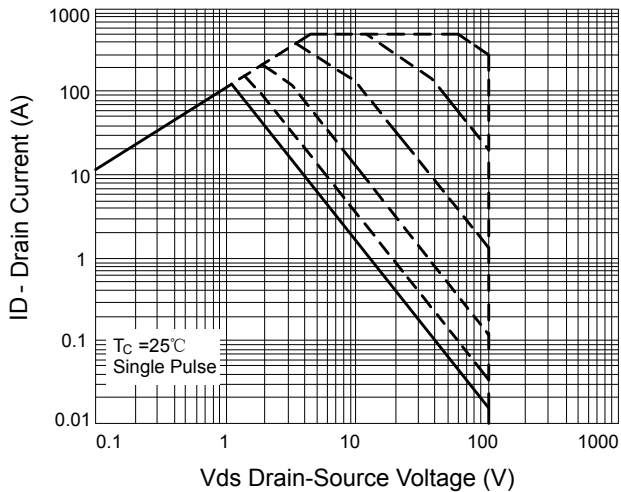


Figure 9 Safe operation area

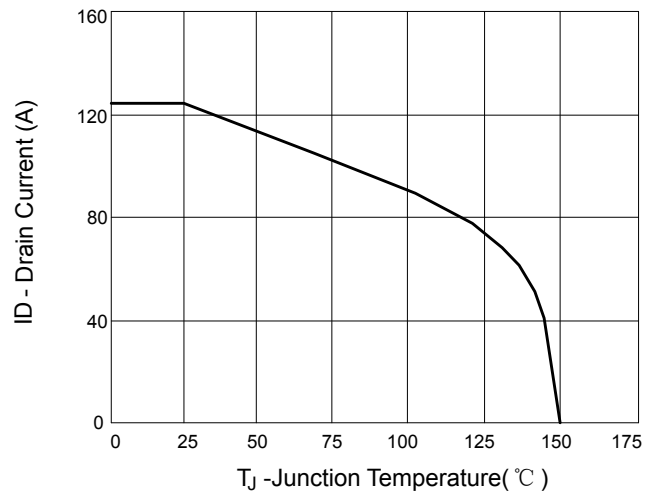
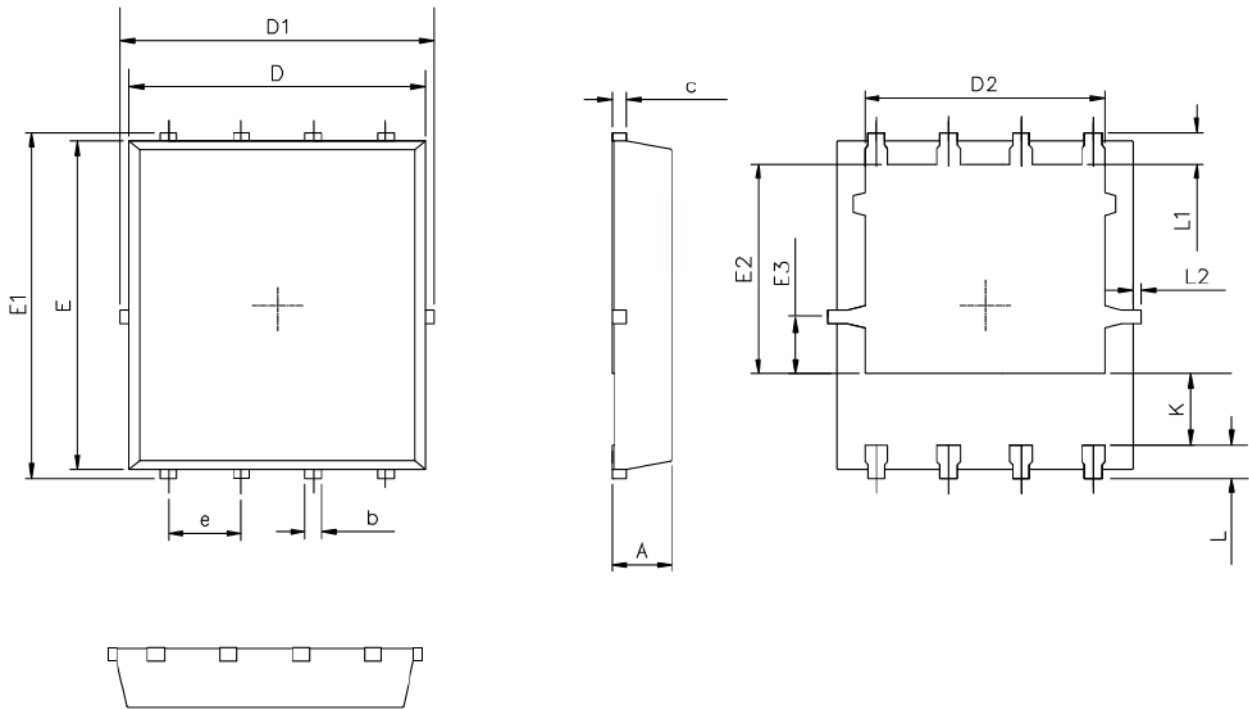
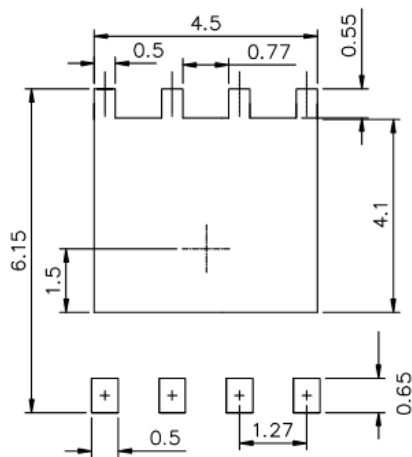


Figure 10 Current de-rating

■ PDFN5X6 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