

PRODUCT CHARACTERISTICS

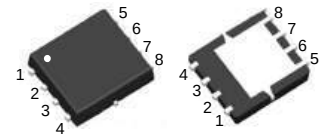
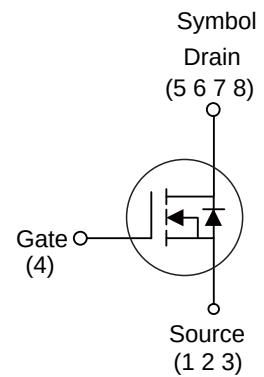
V_{DS}	80V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	2.2m Ω
Qg@typ	70nC
I_D	189A

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	MOT8122G	PDFN5X6	5000 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current Continuous(@ $V_{GS}=10V, T_c=25^{\circ}C$)	I_D	189	A
Drain Current Pulsed	I_{DM}	756	A
Avalanche Energy *	E_{AS}	1024	mJ
Power Dissipation	P_D	170	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}	0.73	$^{\circ}C/W$

Note: * EAS Test 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	80	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =80V, 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	-	2.2	2.6	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.5	2.6	3.5	V
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	2.1	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =5 A	-	22	-	S
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V f=1.0MHz	-	5052	-	pF
Output Capacitance	C _{oss}		-	1022	-	pF
Reverse Transfer Capacitance	C _{rss}		-	38	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =20A, V _{DS} =40V R _G =2.7Ω ,V _{GS} =10V	-	21	-	ns
Rise Time	t _r		-	92	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	45	-	ns
Fall Time	t _f		-	94	-	ns
Total Gate Charge	Q _g	I _D =20A, V _{DS} =40V V _{GS} =10V	-	70	-	nC
Gate to Source Charge	Q _{gs}		-	22	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	13	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	135	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	540	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.69	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20A, T _J =25 °C	-	74	-	ns
Reverse Recovery Charge	Q _{rr}		di /dt=100A/μs	-	111	-

■ TYPICAL CHARACTERISTICS

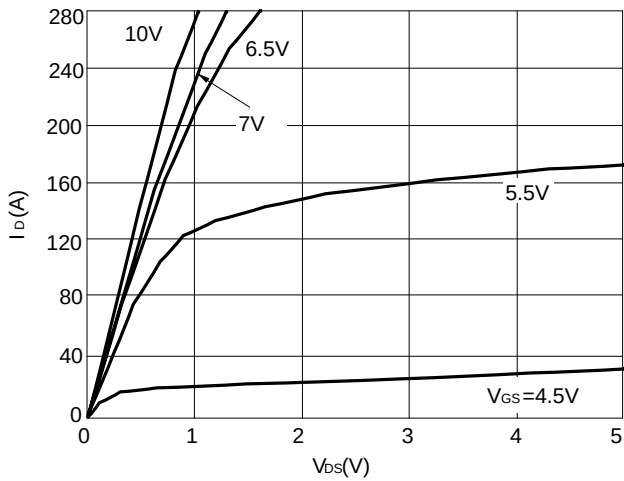


Figure 1: Output Characteristics

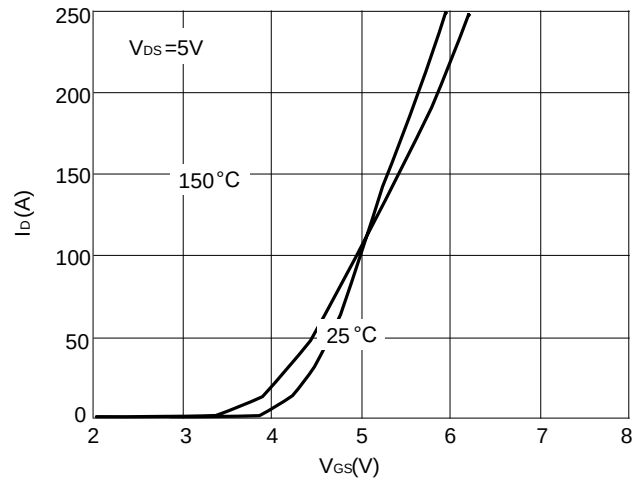


Figure 2: Transfer Characteristics

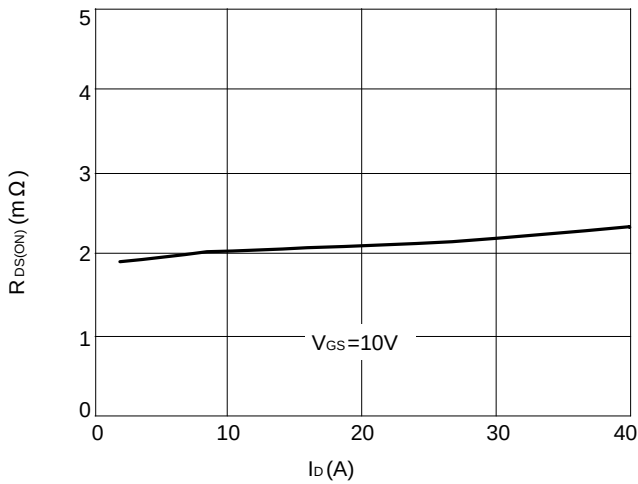


Figure 3: $R_{DS(ON)}$ vs. Drain Current

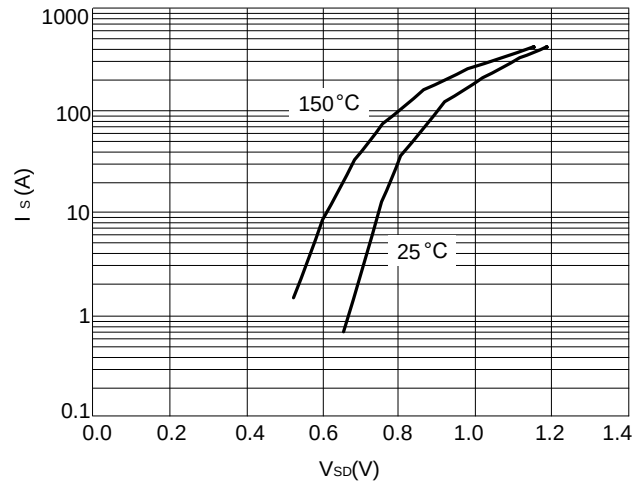


Figure 4: Body Diode Characteristics

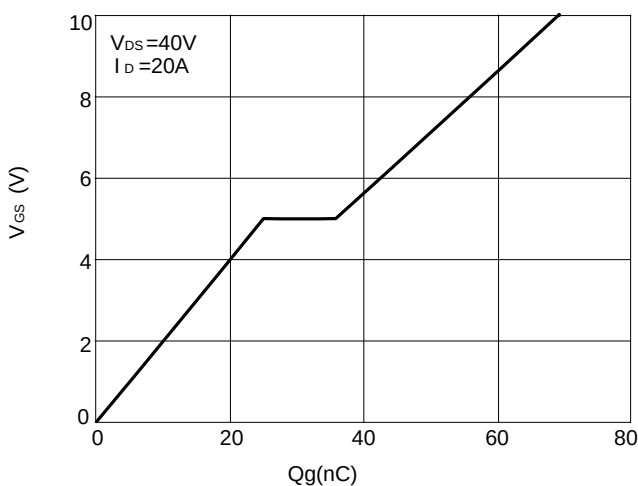


Figure 5: Gate Charge Characteristics

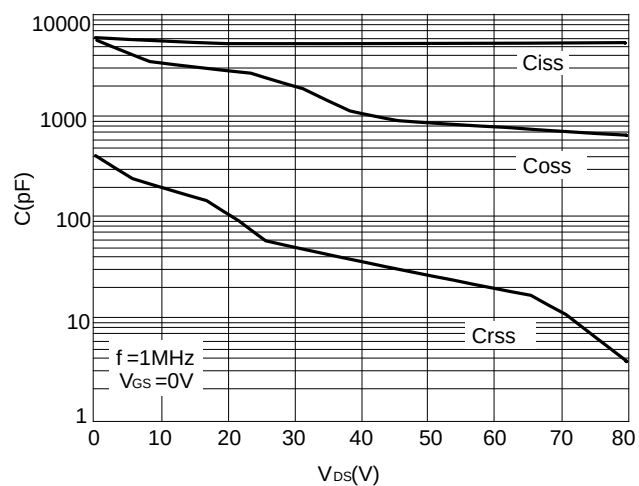


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

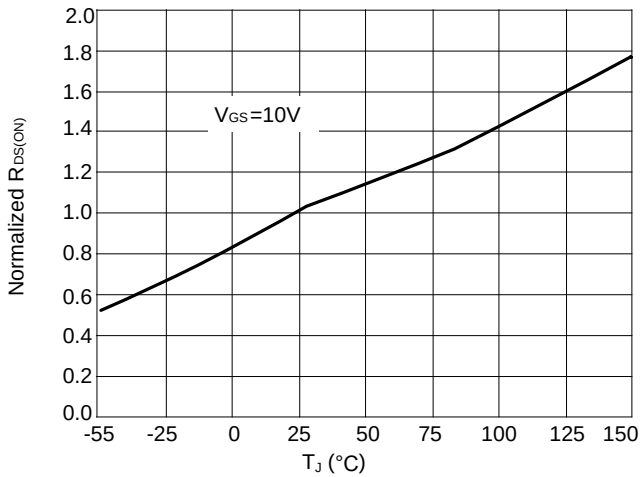


Figure 7: Normalized on-Resistance vs. Junction Temperature

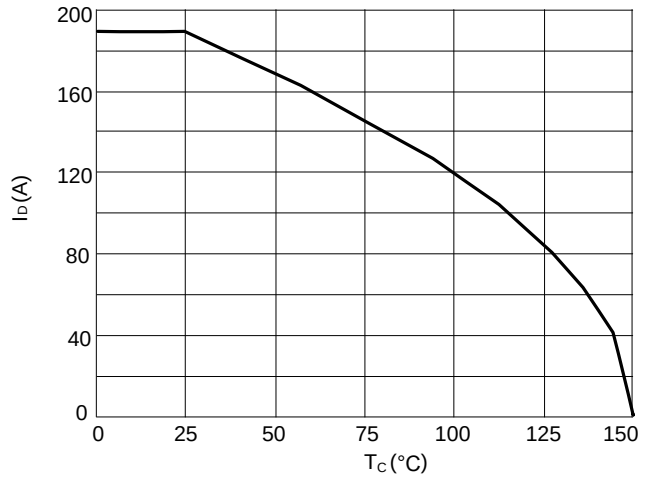


Figure 8: Current De-rating

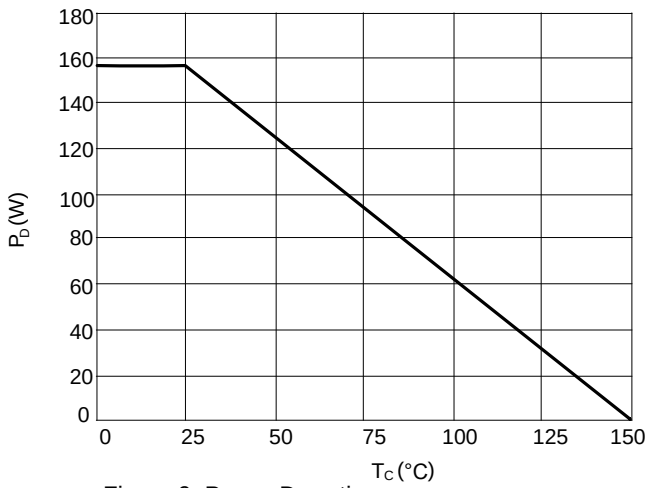


Figure 9: Power De-rating

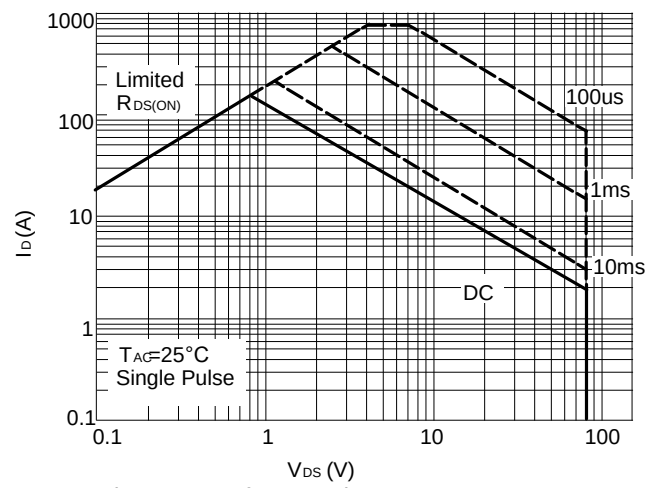
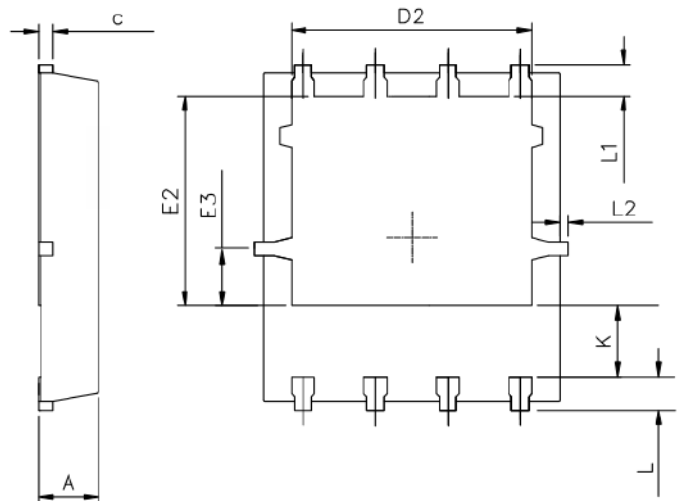
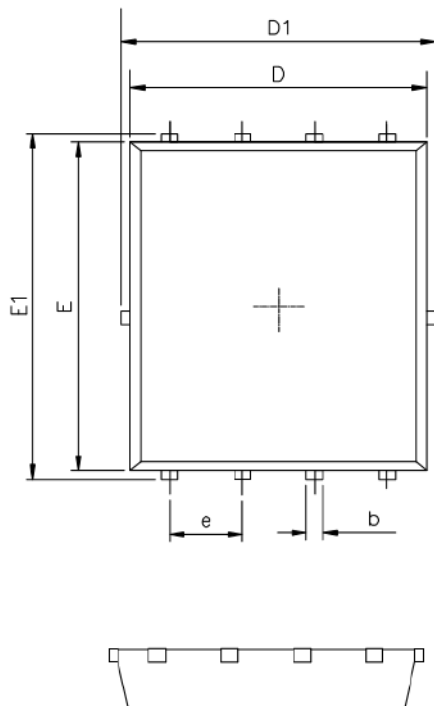
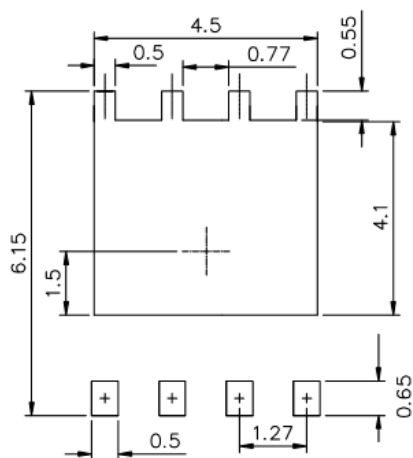


Figure 10: Safe Operating Area

■ 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