

■ PRODUCT CHARACTERISTICS

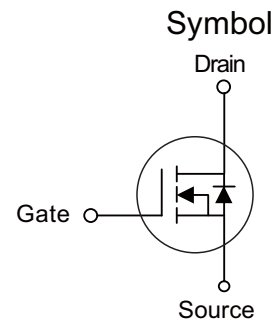
VDSS	30V
$R_{DS(on)typ}@V_{GS}=10V$	1.35mΩ
$R_{DS(on)typ}@V_{GS}=4.5V$	1.8mΩ
ID	170A

■ APPLICATIONS

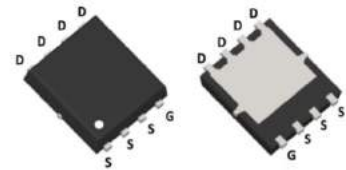
- \* Switching applications

■ FEATURES

- \* Low capacitance
- \* Low gate charge
- \* Fast switching capability
- \* Avalanche energy specified



PDFN5X6-8L



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3114G	PDFN5X6	5000 pieces /Reel

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	±20	V
Continuous Drain Current	$I_D$	170	A
Pulsed drain current	$I_{DM}$	400	A
Power Dissipation	$P_D$	88	W
Derate above 25°C		0.37	W/°C
Junction Temperature	$T_J$	+150	°C
Storage Temperature	$T_{STG}$	-55 ~ +150	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	$\theta_{JC}$	1.42	°C/W

■ Electrical Characteristics (T<sub>c</sub>=25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.0	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =85A	-	1.35	1.65	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =85A	-	1.8	2.2	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =85A	20	-	-	S
Dynamic characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, F=1.0MHz	-	6150	-	PF
Output Capacitance	C <sub>oss</sub>		-	1550	-	PF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	105	-	PF
Dynamic characteristics						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =85A V <sub>GS</sub> =10V, R <sub>G</sub> =1.6Ω	-	13	-	nS
Turn-on Rise Time	t <sub>r</sub>		-	7.5	-	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	51	-	nS
Turn-Off Fall Time	t <sub>f</sub>		-	8.6	-	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =85A, V <sub>GS</sub> =10V	-	98	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	16	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	11	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =85A	-	-	1.2	V
Diode Forward Current	I <sub>S</sub>		-	-	170	A
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> = I <sub>S</sub>	-	32	-	nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/μs	-	112	-	nC

■ TYPICAL CHARACTERISTICS

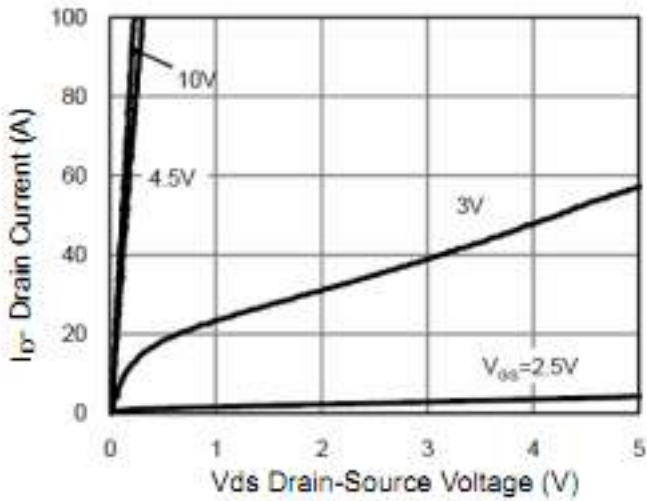


Figure 1 Output Characteristics

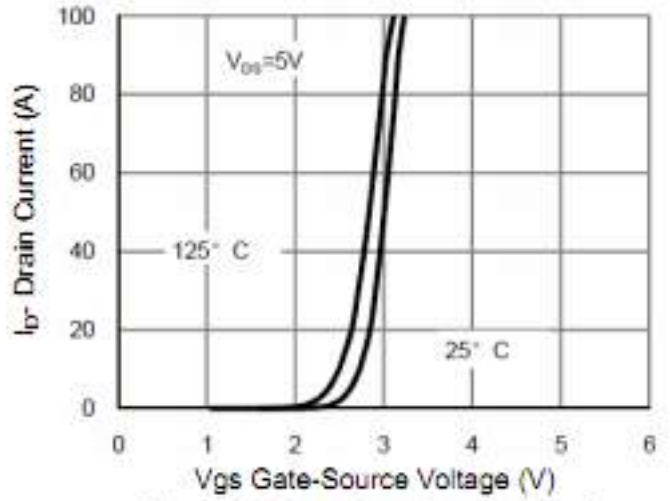


Figure 2 Transfer Characteristics

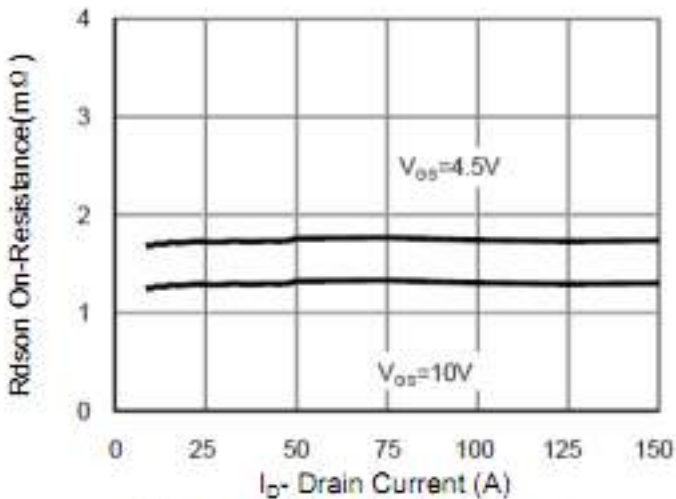


Figure 3 Rdson- Drain Current

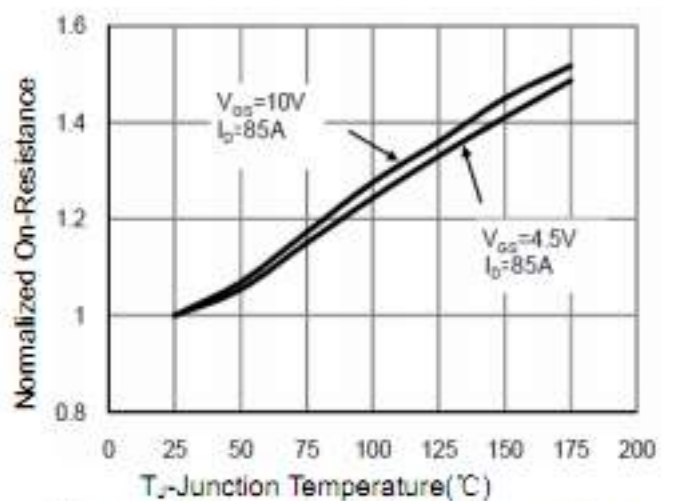


Figure 4 Rdson-Junction Temperature

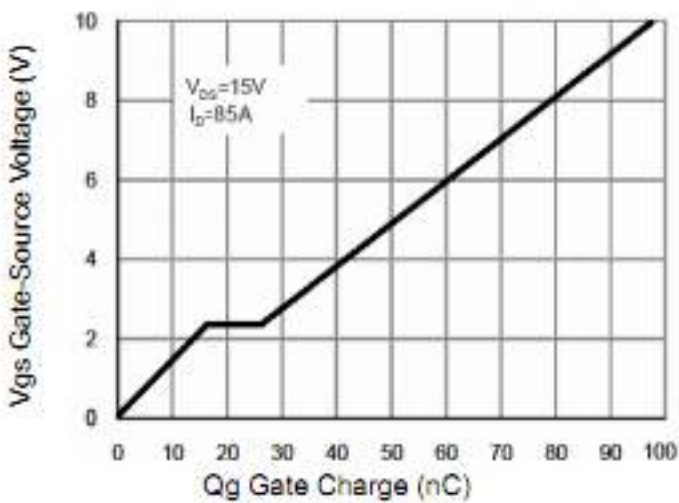


Figure 5 Gate Charge

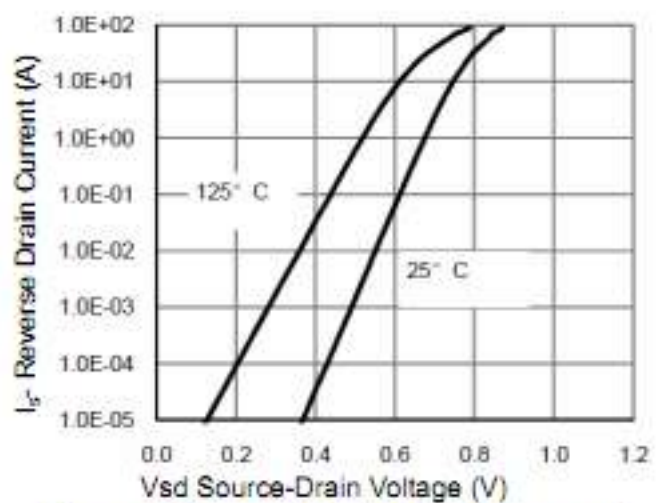


Figure 6 Source- Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

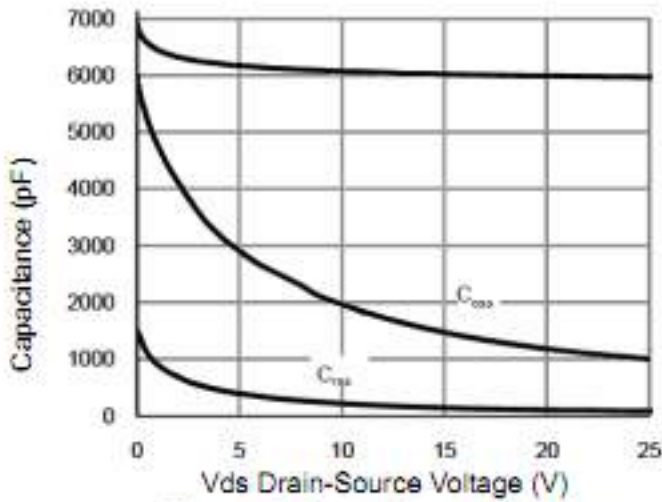


Figure 7 Capacitance vs Vds

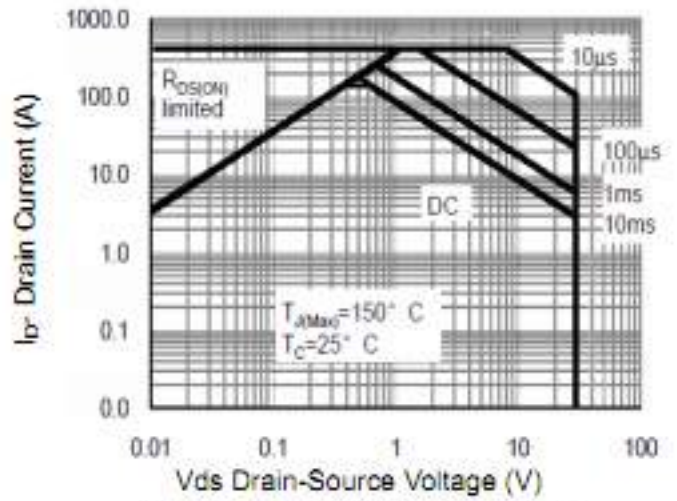


Figure 8 Safe Operation Area

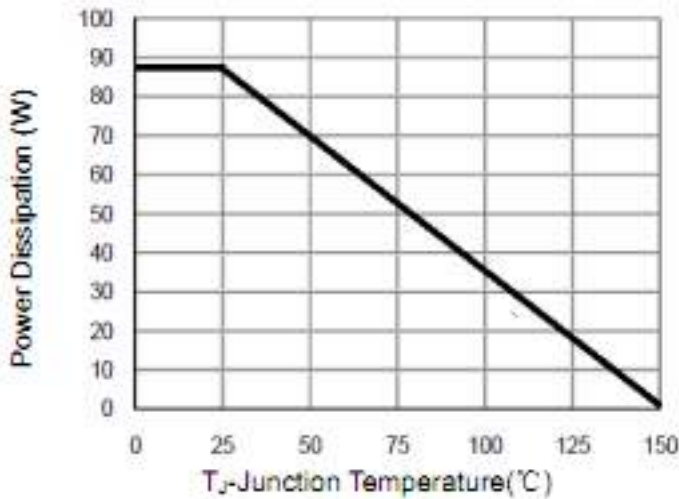


Figure 9 Power De-rating

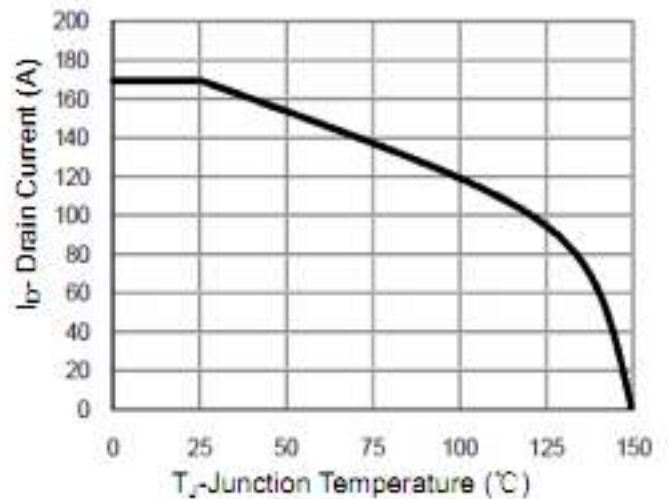


Figure 10 Current De-rating

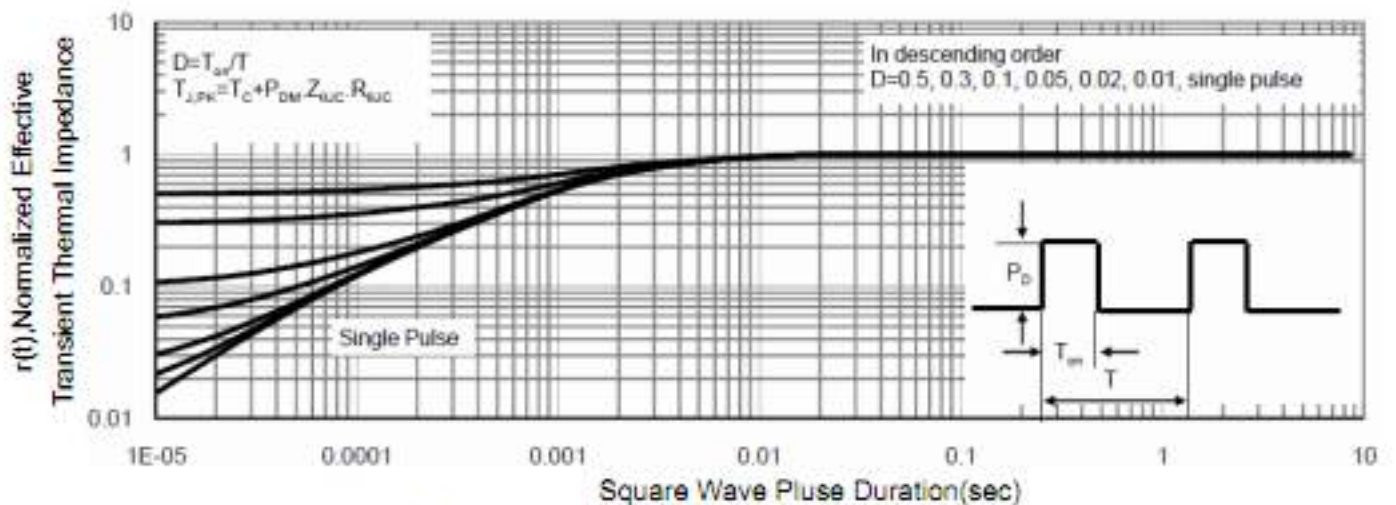
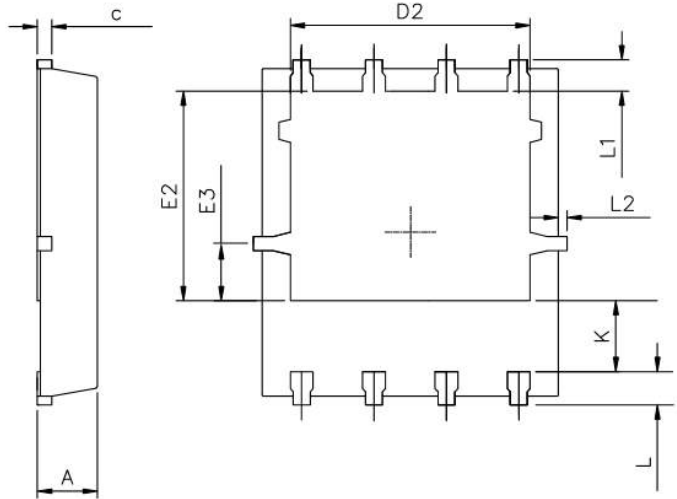
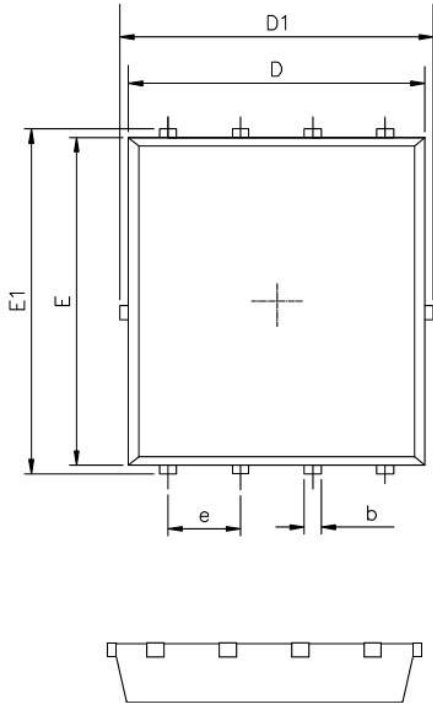
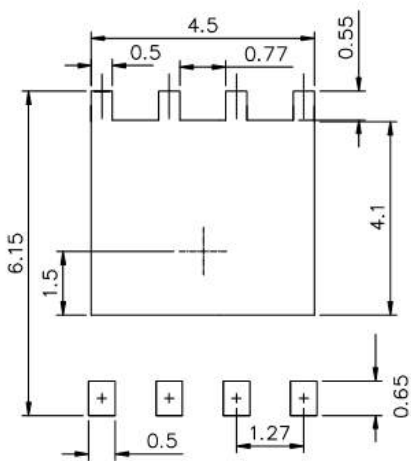


Figure 11 Normalized Maximum Transient Thermal Impedance

■ PDFN5X6-8L 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

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