

■ PRODUCT CHARACTERISTICS

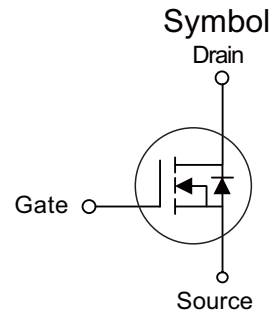
V _{DSS}	100V
R _{DS(on)typ} (@V _{GS} =10 V)	11.6mΩ
R _{DS(on)typ} (@V _{GS} =4.5 V)	16.5mΩ
I _D	38A

■ APPLICATIONS

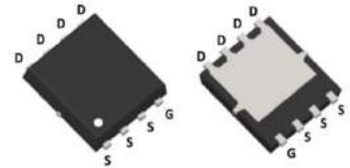
- * Power management in computing
- * Load switching,quick/wireless charging
- * Motor driving

■ FEATURES

- * Ultra low Rdson
- * Low gate charge
- * Pb-free lead plating



PDFN3X3-8L



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen- Free	Halogen		
N/A	MOT1514J	PDFN3X3	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS (T_J=25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current	Continuous ⁽¹⁾	I _D	38
	Pulsed ⁽²⁾	I _{DM}	154
Avalanche Energy ⁽³⁾	E _{AS}	45	mJ
Power Dissipation ⁽⁴⁾	P _D	32	W
Operating Junction Temperature	T _J	-55-150	°C

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal resistance junction to ambient	θ _{JA}	3.9	°C/W

■ ELECTRICAL CHARACTERISTICS (T_c=25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D = 250μA, V _{GS} = 0V	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V T _J = 55°C	-	-	1.0	μA
			-	-	5.0	
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.9	2.5	V
Static Drain-Source ON-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	11.6	14	mΩ
		V _{GS} = 4.5V, I _D = 15A	-	16.5	22	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 20A	-	57	-	S
Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V	-	0.70	1.0	V
Diode Continuous Current	I _S	T _C = 25°C	-	-	32	A
Dynamic characteristics⁽⁵⁾						
Input Capacitance	C _{iSS}	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	1535	-	pF
Output Capacitance	C _{oss}		-	335	-	pF
Reverse Transfer Capacitance	C _{rss}		-	8.2	-	pF
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	-	1.9	-	Ω
Switching characteristics⁽⁵⁾						
Total Gate Charge (@ V _{GS} = 10V)	Q _g	V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 20A	-	26	-	nC
Total Gate Charge (@ V _{GS} = 4.5V)	Q _g		-	14.0	-	nC
Gate Source Charge	Q _{gs}		-	4.3	-	nC
Gate Drain Charge	Q _{gd}		-	6.8	-	nC
Turn-On DelayTime	t _{D(on)}	V _{GS} = 10V, V _{DS} = 50V R _L = 2.5Ω, R _{GEN} = 6Ω	-	7.5	-	ns
Turn-On Rise Time	t _r		-	15.8	-	ns
Turn-Off DelayTime	t _{D(off)}		-	31	-	ns
Turn-Off Fall Time	t _f		-	28	-	ns
Body Diode Reverse Recovery Time	t _{rr}		I _F = 15A, dI _F /dt = 100A/μs	-	43	-
Body Diode Reverse Recovery Charge	Q _{rr}	I _F = 15A, dI _F /dt = 100A/μs	-	35	-	nC

Notes:

1. Computed continuous current assumes the condition of T_{J,Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under T_{J,Max} = 150°C.
3. This single-pulse measurement was taken under the following condition [L = 100μH, V_{GS} = 10V, V_{DS} = 30V] while its value is limited by T_{J,Max} = 150°C.
4. The power dissipation P_D is based on T_{J,Max} = 150°C.
5. This value is guaranteed by design hence it is not included in the production test.

■ TYPICAL CHARACTERISTICS

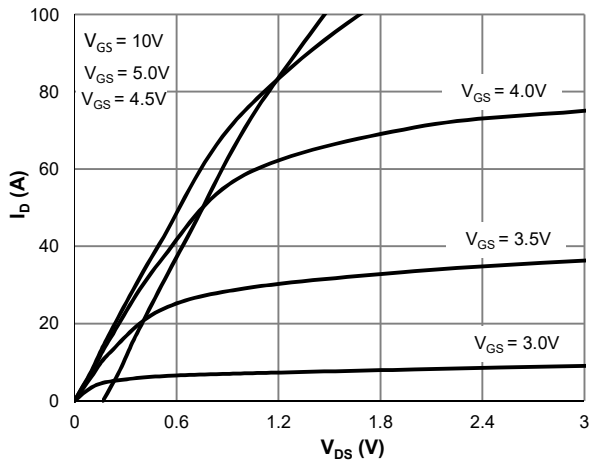


Figure 1: Saturation Characteristics

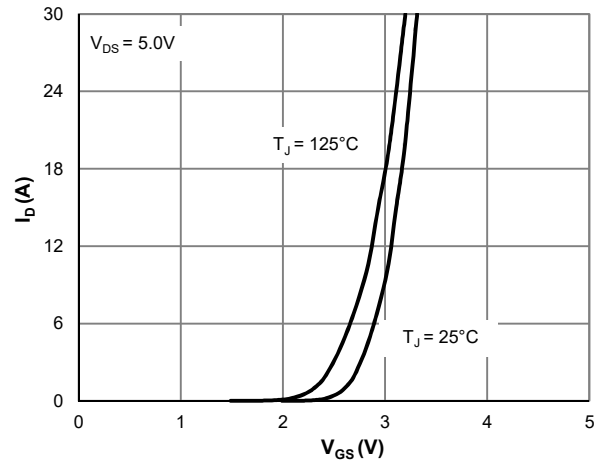


Figure 2: Transfer Characteristics

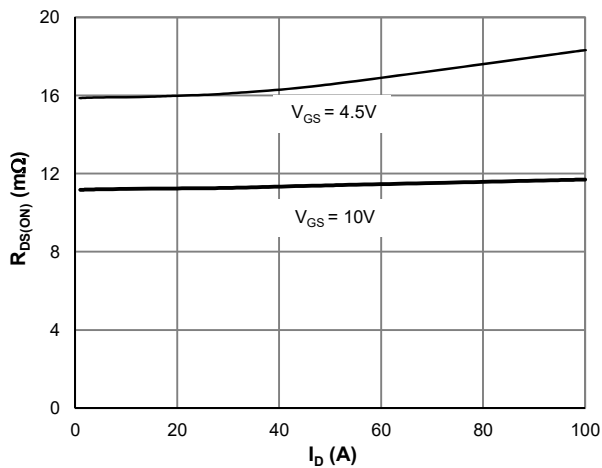


Figure 3: $R_{DS(ON)}$ vs. Drain Current

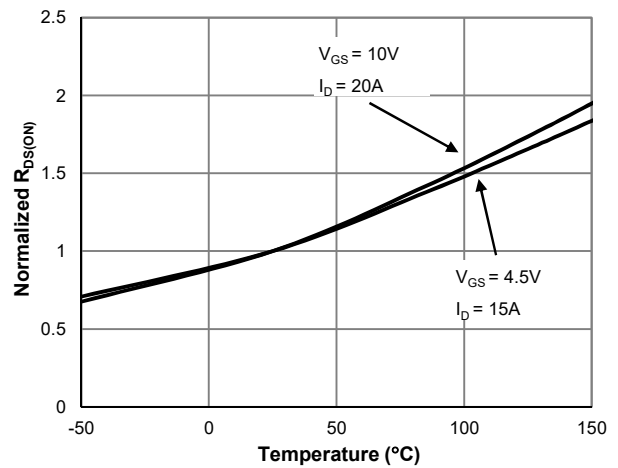


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

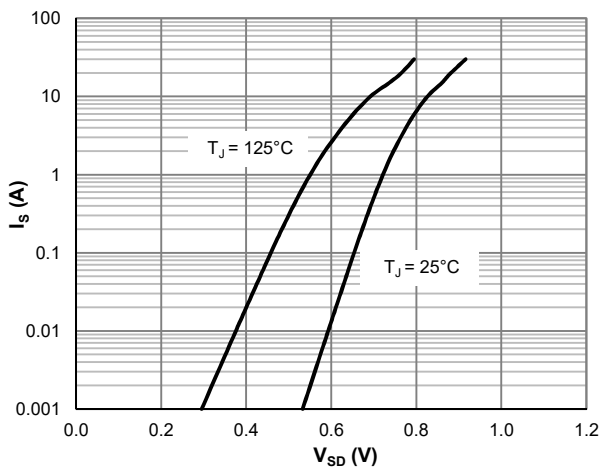


Figure 5: Body-Diode Characteristics

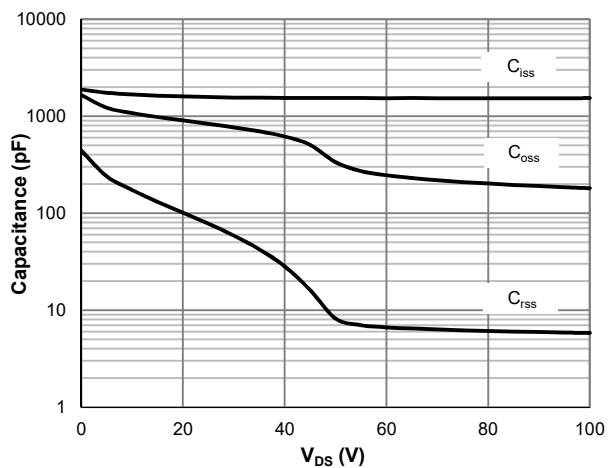


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

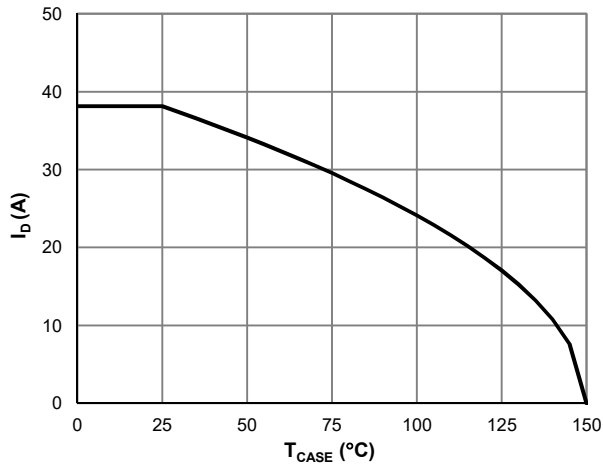


Figure 7: Current De-rating

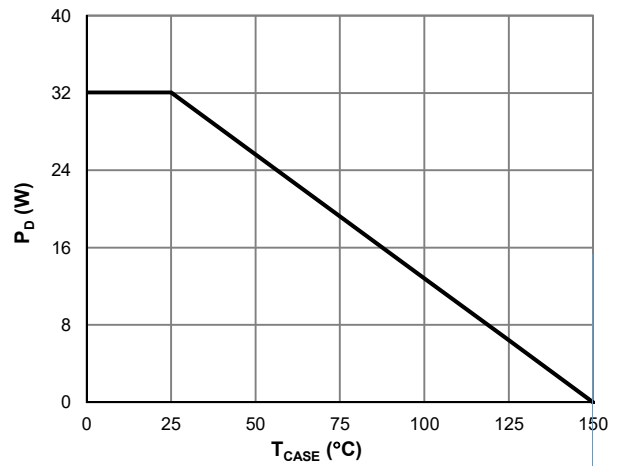


Figure 8: Power De-rating

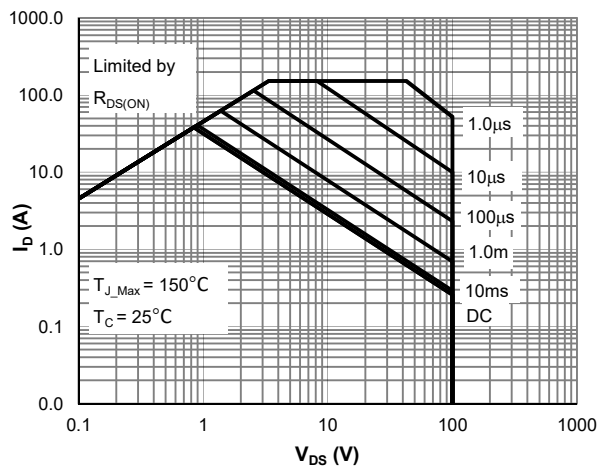


Figure 9: Maximum Safe Operating Area

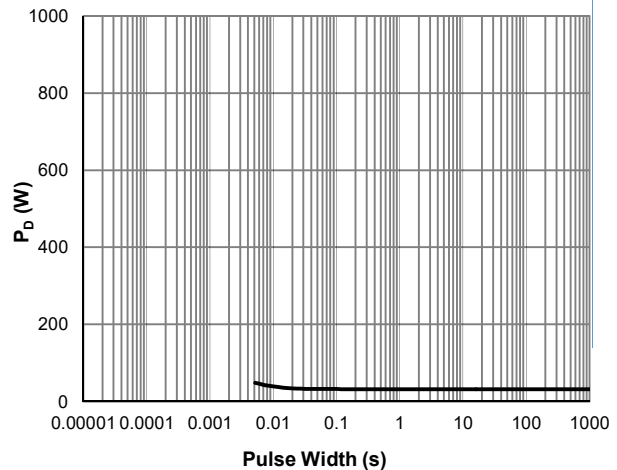


Figure 10: Single Pulse Power Rating, Junction-to-Case

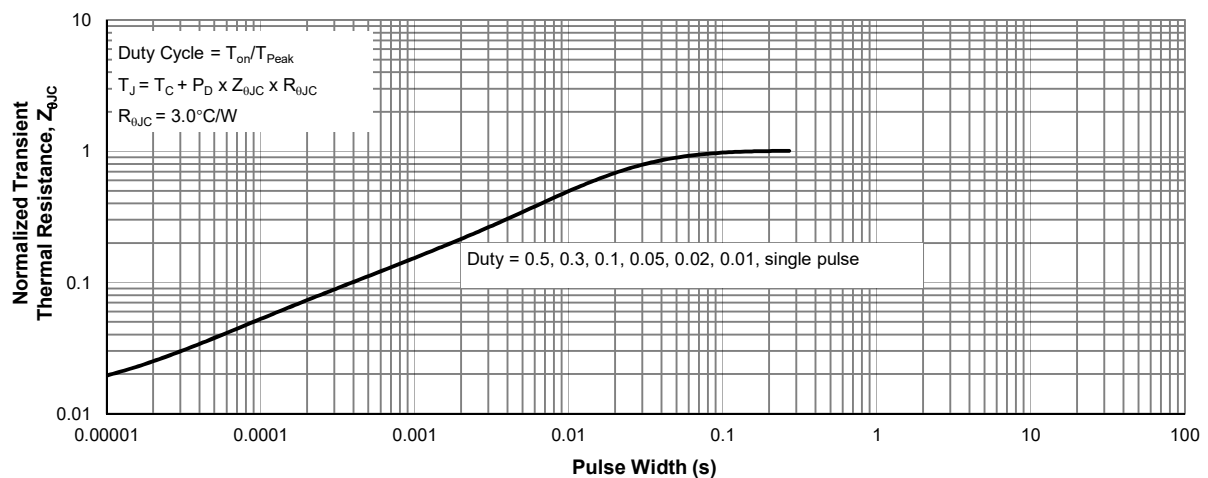
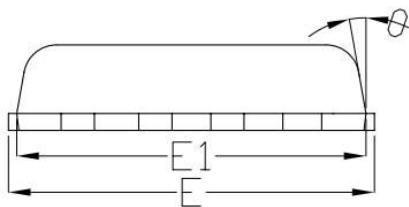
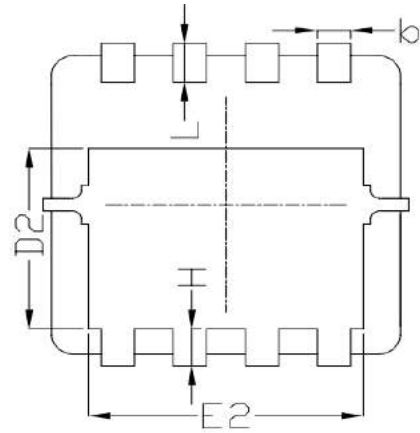
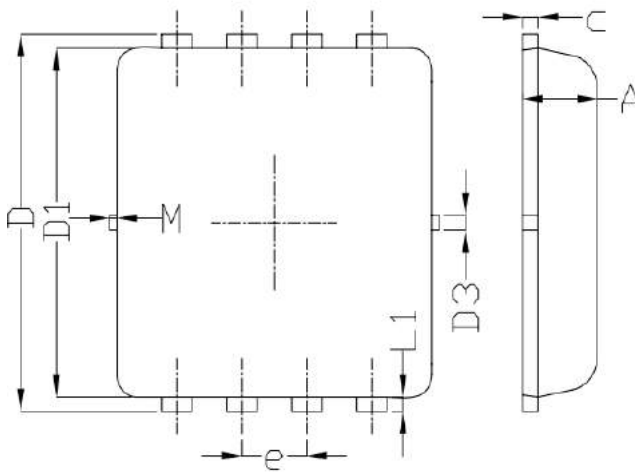
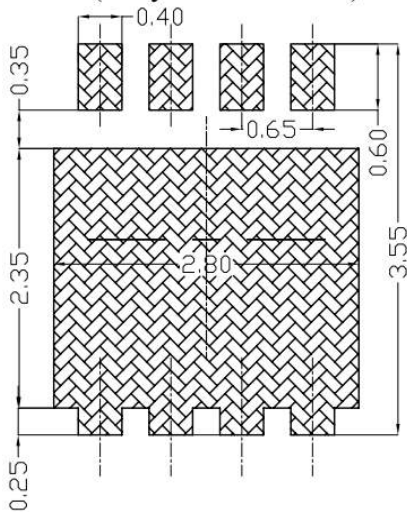


Figure 11: Normalized Maximum Transient Thermal Impedance

■ PDFN3X3-8L Package Mechanical Data



Land Pattern
(Only for Reference)



SYMBOL	DIMENSIONAL REOMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			