

■ PRODUCT CHARACTERISTICS

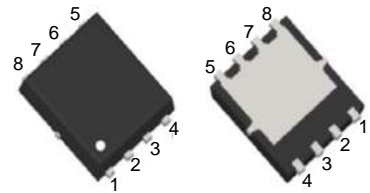
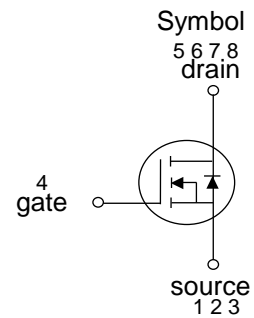
V_{DSS}	40V
$R_{DS(on)}$ Typ(@ $V_{GS}=4.5V$)	15m Ω
$R_{DS(on)}$ Typ(@ $V_{GS}=10V$)	10m Ω
I_D	40A

■ APPLICATIONS

DC/DC converter
Ideal for high-frequency switching
and synchronous rectification

■ FEATURES

Very low on-resistance $R_{DS(on)}$
Good stability and uniformity with high E_{AS}
Pb-free lead plating



PDFN3X3-8L

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT4513J	PDFN3X3-8L	5000pieces/Reel

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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	40	V
Gate-source voltage	V_{GSS}	± 20	V
Drain current	I_D	40	A
Pulsed drain current	I_{DM}	160	A
Single pulsed avalanche energy	E_{AS}	49	mJ
Power dissipation	P_D	35	W
Junction temperature	T_J	$+150$	$^{\circ}C$
Storage temperature	T_{STG}	$-55 \sim +150$	$^{\circ}C$

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _{DS} ≤ 100μA	40	-	-	V
Drain-source leakage current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate-source leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	100	nA
On characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} ≤ 100μA	1	-	2.5	V
On-state characteristics	R _{DS(ON)}	V _{GS} =10V, I _D =30A	-	10	13	mΩ
		V _{GS} =4.5V, I _D =20A	-	15	19	mΩ
Forward transconductance	g _{FS}	V _{DS} =10V, I _D =8A	10	-	-	S
Dynamic characteristics						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V f=1MHz	-	1913	-	pF
Out capacitance	C _{oss}		-	125	-	pF
Reverse transfer capacitance	C _{rss}		-	104	-	pF
Switching characteristics						
Total gate charge	Q _g	V _{GS} =10V, V _{DS} =20V I _D =20A	-	40	-	nC
Gate-source charge	Q _{gs}		-	4.4	-	nC
Gate-drain charge	Q _{gd}		-	10.3	-	nC
Turn-on delay time	t _{d(on)}	V _{DD} =20V, I _D =20A R _{θJC} 3, V _{GS} =10V	-	8	-	nS
Turn-on rise time	t _r		-	28	-	nS
Turn-off delay time	t _{d(off)}		-	36	-	nS
Turn-off fall time	t _f		-	6	-	nS
Source-drain diode ratings and characteristics						
Continuous diode forward current	I _{SD}		-	-	40	A
Diode forward current	V _{SD}	V _{GS} =0V, I _{SD} =30A	-	-	1.2	V
Reverse recovery time	t _{rr}	I _F =20A	-	10	-	nS
Reverse recovery charge	Q _{rr}	di/dt=100A/us	-	5	-	nC

■ TYPICAL CHARACTERISTICS

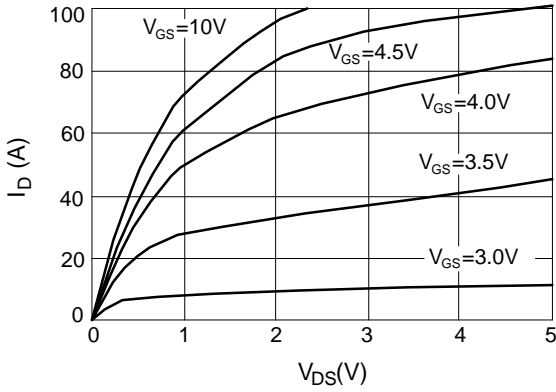


Fig.1 output characteristics

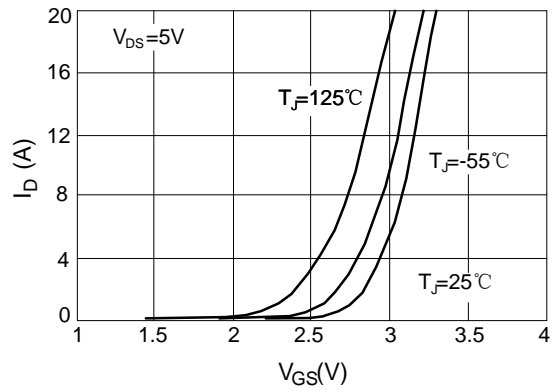


Fig.2 typical transfer characteristics

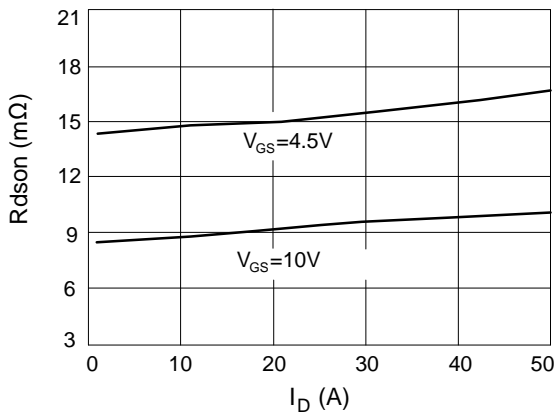


Fig.3 on-resistance vs. drain current

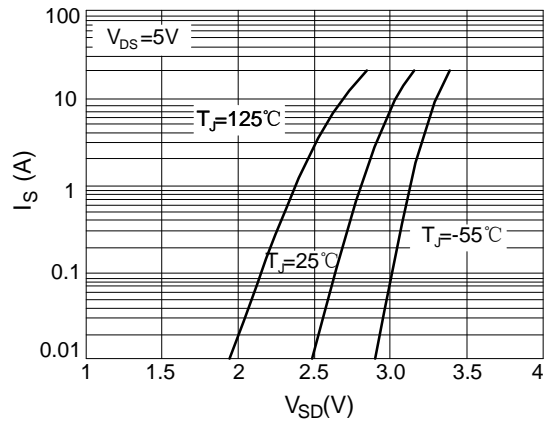


Fig.4 body diode characteristics

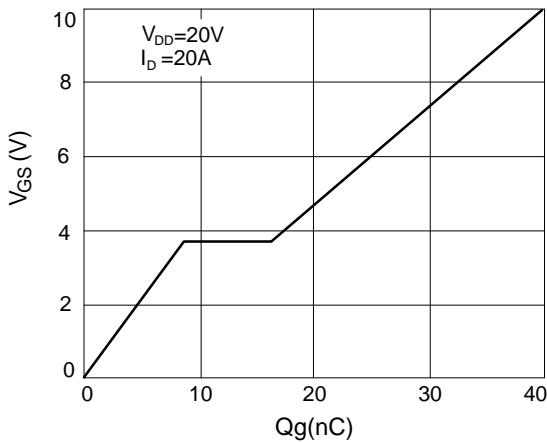


Fig.5 gate charge characteristics

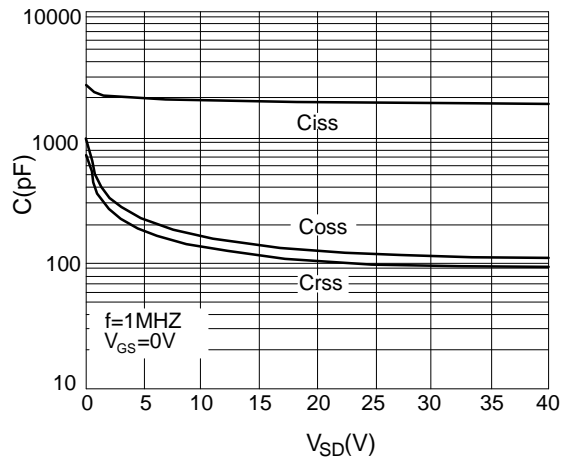


Fig.6 capacitance characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

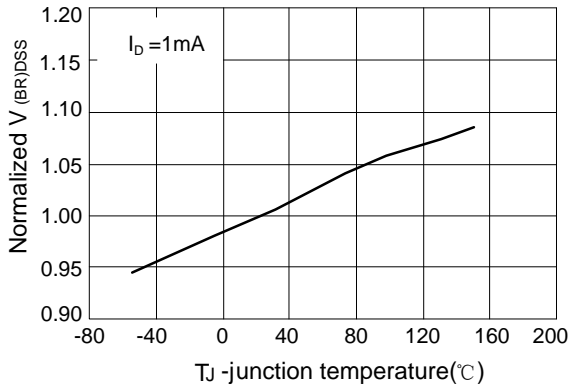


Fig.7 normalized breakdown voltage vs. junction temperature

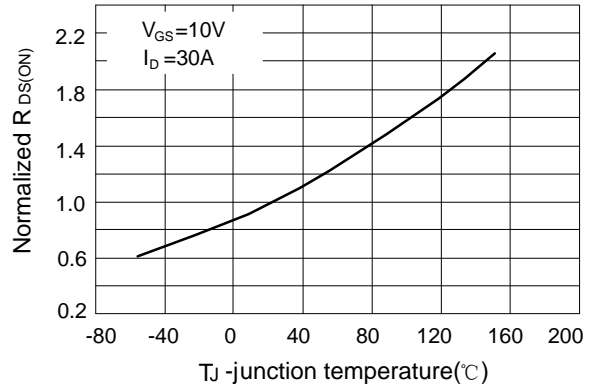


Fig.8 normalized on resistance vs. junction temperature

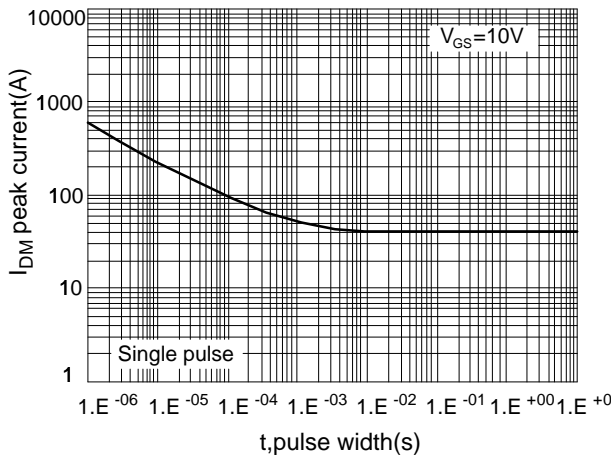


Fig.9 peak current capacity

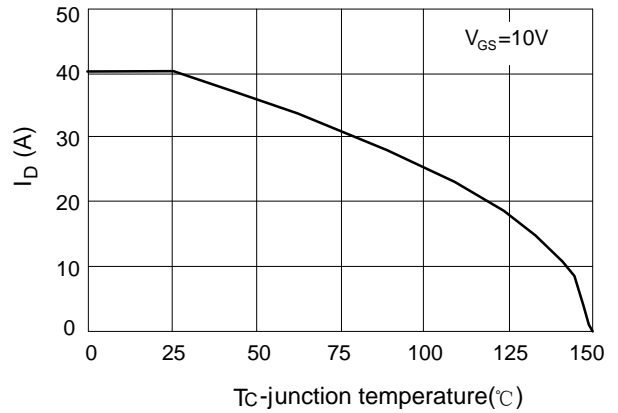


Fig.10 maximum continuous drain current vs. case temperature

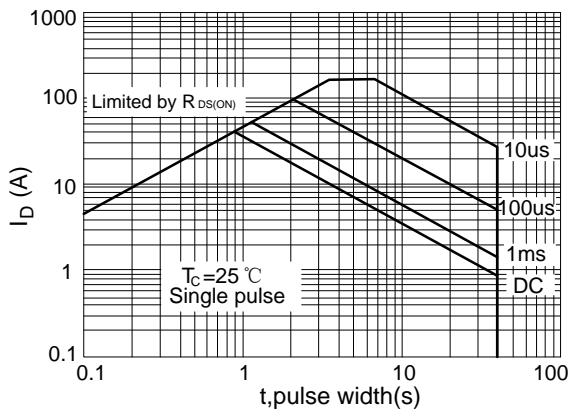
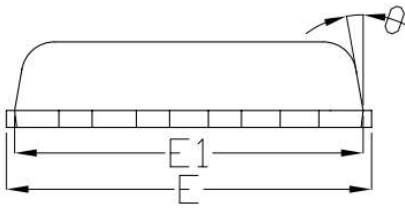
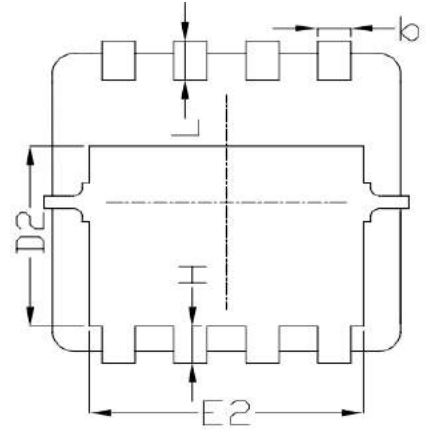
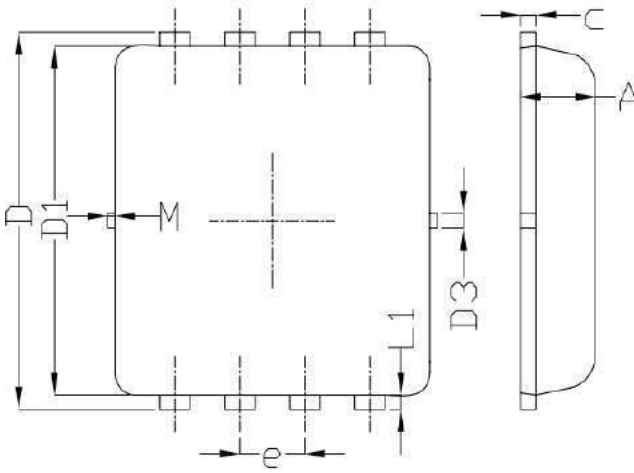
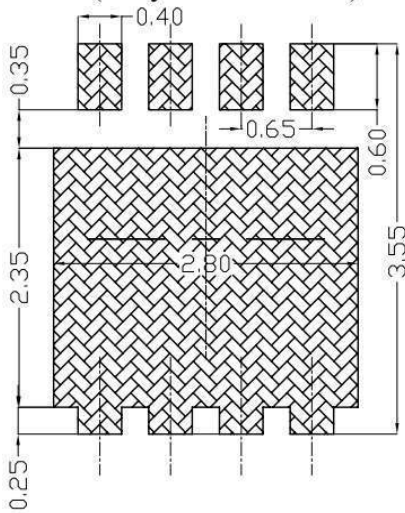


Fig.11 maximum safe operating area

■ 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			

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