

PRODUCT CHARACTERISTICS

V_{DSS}	30V
$R_{DS(on)}$ Typ(@ $V_{GS}=4.5V$)	19m Ω
$R_{DS(on)}$ Typ(@ $V_{GS}=10V$)	13m Ω
I_D	8A

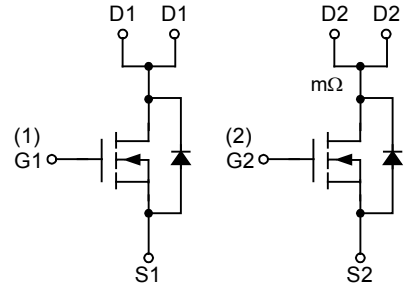
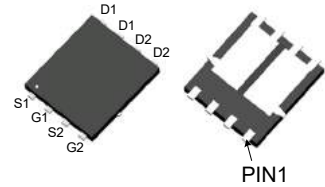
APPLICATIONS

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

Pin description



N+N MOSFET

ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT3920J	PDFN3X3	5000pieces/Reel

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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	30	V
Gate-source voltage	V_{GSS}	± 12	V
Drain current	$T_C=25^\circ\text{C}$	8	A
	$T_C=100^\circ\text{C}$	5	A
Pulsed drain current	I_{DM}	32	A
Avalanche energy single pulsed	E_{AS}	16	mJ
Power dissipation	P_D	1.8	W
Junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
Drain-source leakage current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate-source leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} =0V	-	-	100	nA
On characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	1	-	2.5	V
On-state characteristics	R _{DS(ON)}	V _{GS} =10V, I _D =4A	-	13	20	mΩ
		V _{GS} =4.5V, I _D =4A	-	19	29	mΩ
Forward transconductance	g _{FS}	V _{DS} =10V, I _D =4A	10	-	-	S
Dynamic characteristics						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V f=1MHz	-	785	-	pF
Out capacitance	C _{oss}		-	65	-	pF
Reverse transfer capacitance	C _{rss}		-	54	-	pF
Switching characteristics						
Total gate charge	Q _g	V _{GS} =0 to 4.5V V _{DS} =15V, I _D =3A	-	19.4	-	nC
Gate-source charge	Q _{gs}		-	2.5	-	nC
Gate-drain charge	Q _{gd}		-	5	-	nC
Turn-on delay time	t _{d(on)}	V _{DD} =15V, I _D =3A R _G =3Ω, V _{GS} =10V	-	4	-	nS
Turn-on rise time	t _r		-	11	-	nS
Turn-off delay time	t _{d(off)}		-	24	-	nS
Turn-off fall time	t _f		-	2	-	nS
Source-drain diode ratings and characteristics						
Continuous diode forward current	I _{SD}		-	-	8	A
Diode forward current	V _{SD}	V _{GS} =0V, I _{SD} =8A	-	-	1.2	V
Reverse recovery time	t _{rr}	I _F =3A di/dt=100A/us	-	8.4	-	nS
Reverse recovery charge	Q _{rr}		-	3.3	-	nC

■ TYPICAL CHARACTERISTICS

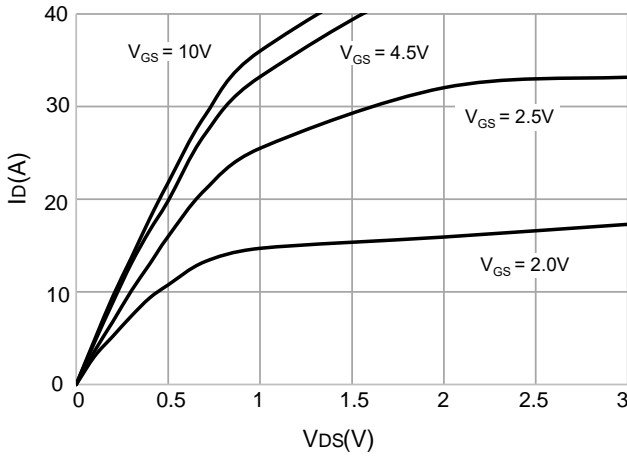


Fig.1 Output characteristic

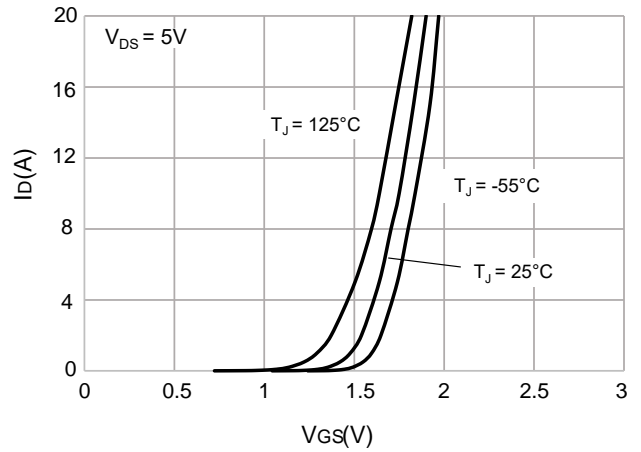


Fig.2 Transfer characteristics

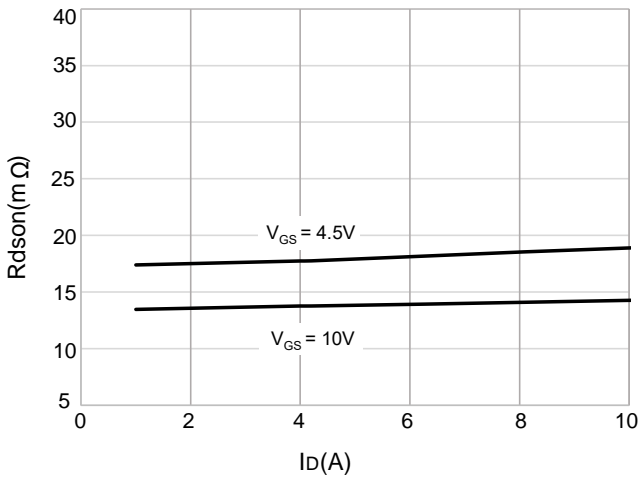


Fig.3 On-resistance vs. drain current

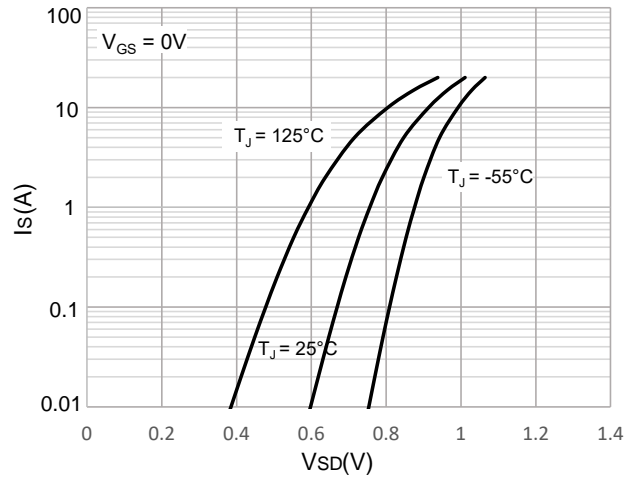


Fig.4 Body diode characteristics

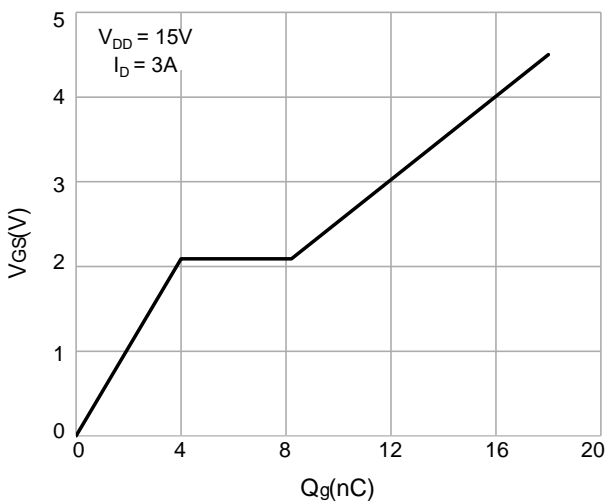


Fig.5 Gate charge characteristics

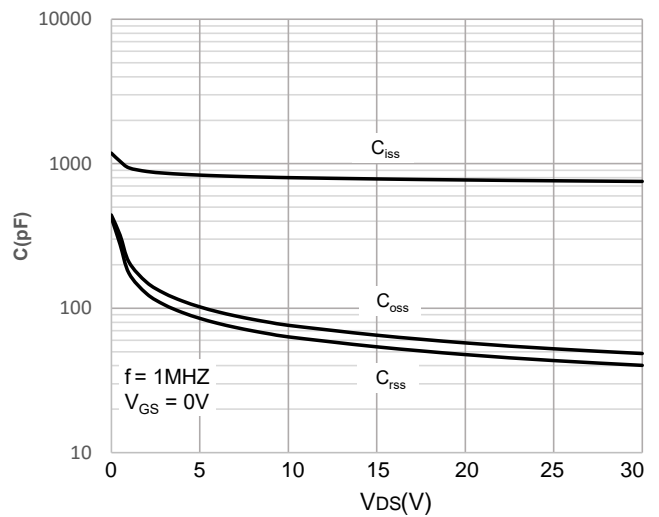


Fig.6 Capacitance characteristics

■ TYPICAL CHARACTERISTICS

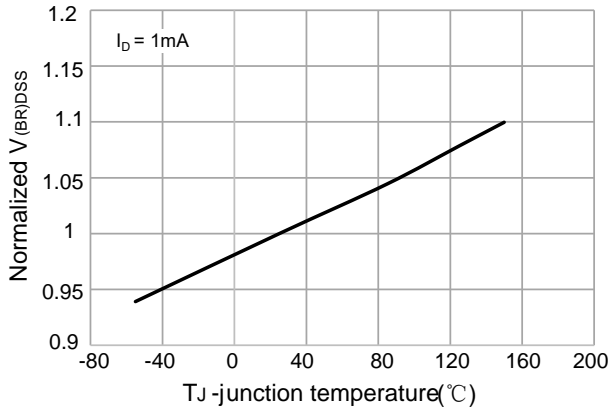


Fig.7 Normalized berkdwn voltage vs junction temperature

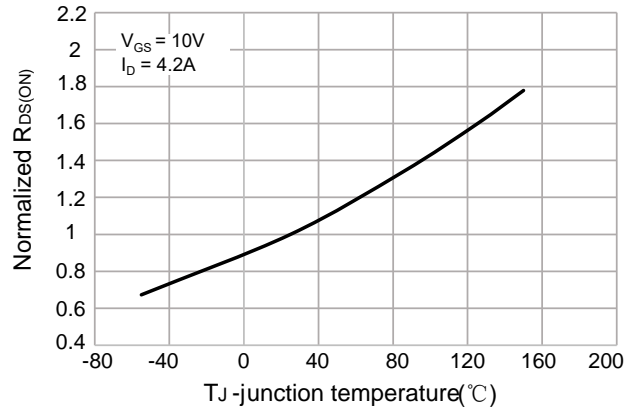


Fig.8 Normalized on resistance vs. junction temperature

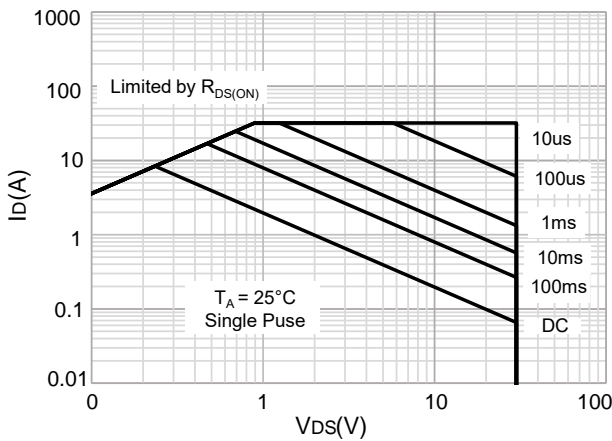


Fig.9 Maximum safe operating area

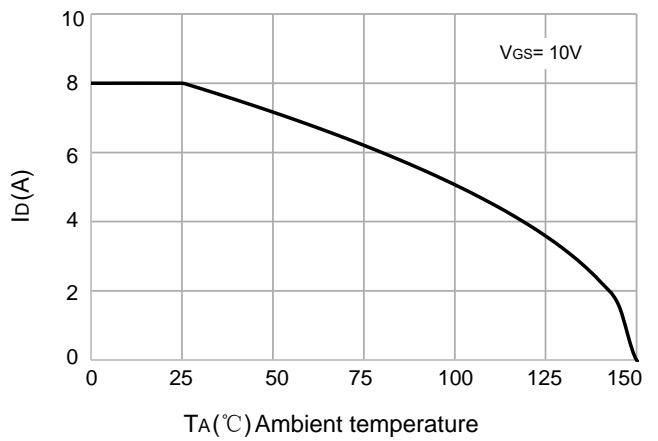


Fig.10 Maximum continuous drain current vs. ambient temperature

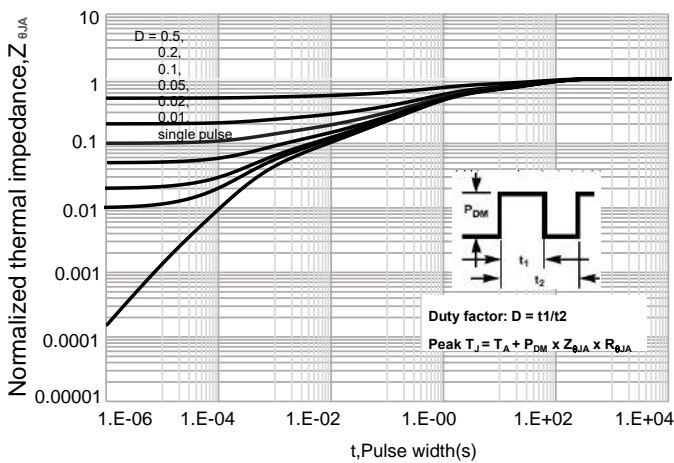


Fig.11 Normalized maximum transient thermal impedance

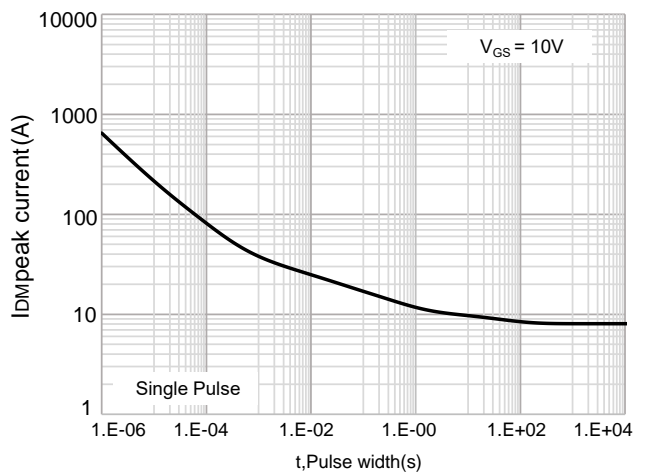
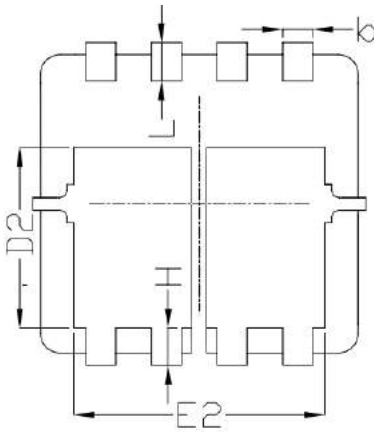
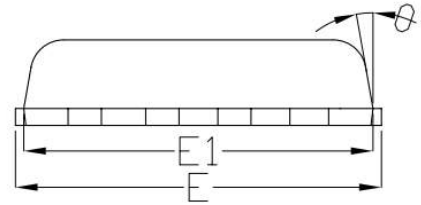
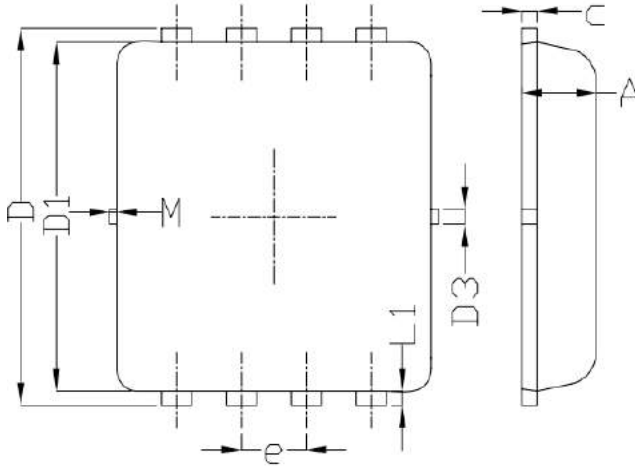


Fig.12 Peak current capacity

■ PDFN3X3-8L Package Mechanical Data



SYMBOL	DIMENSIONAL REQMTS		
	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			