

PRODUCT CHARACTERISTICS

VDSS	40V
$R_{DS(on)Typ}(@V_{GS}=4.5V)$	28m Ω
$R_{DS(on)Typ}(@V_{GS}=10V)$	24m Ω
ID	9A

APPLICATIONS

- DC/DC Converter

FEATURES

- Very low on-resistance $R_{DS(on)}$
- Pb-free lead plating

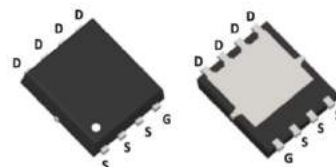
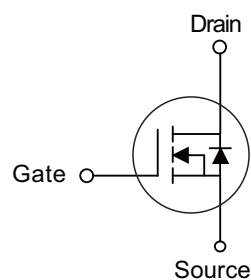
ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4529J	PDFN3X3	5000 pieces /Reel

ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous (Silicon Limited)	I _D	9	A
Drain Current-Continuous(T _C =100°C)	I _D (100°C)	6.4	A
Pulsed Drain Current (Package Limited)	I _{DM}	40	A
Maximum Power Dissipation	P _D	2	W
Thermal Resistance,Junction-to-Ambient	R _{θJA}	62.5	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C

Symbol



PDFN3X3-8L

■ 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 _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate-Body 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 _D =250μA	1	1.5	2.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =8A	-	24	29	mΩ
		V _{GS} =4.5V, I _D =4A	-	28	34	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =8A	10	-	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, F=1.0MHz	-	1060	-	PF
Output Capacitance	C _{oss}		-	121	-	PF
Reverse Transfer Capacitance	C _{rss}		-	111	-	PF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =20V, R _L =2.5Ω V _{GS} =10V, R _{GEN} =3Ω	-	5.5	-	nS
Turn-on Rise Time	t _r		-	14	-	nS
Turn-Off Delay Time	t _{d(off)}		-	24	-	nS
Turn-Off Fall Time	t _f	V _{DS} =20V, I _D =8A, V _{GS} =10V	-	12	-	nS
Total Gate Charge	Q _g		-	26	-	nC
Gate-Source Charge	Q _{gs}		-	3.7	-	nC
Gate-Drain Charge	Q _{gd}		-	6.0	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9A	-	0.8	1.2	V

■ TYPICAL CHARACTERISTICS

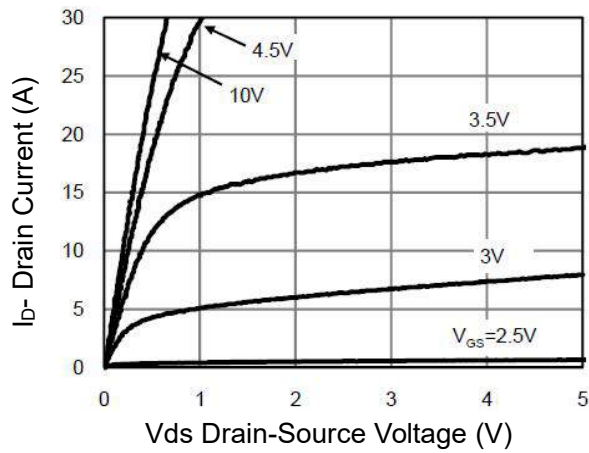


Figure 1 Output characteristics

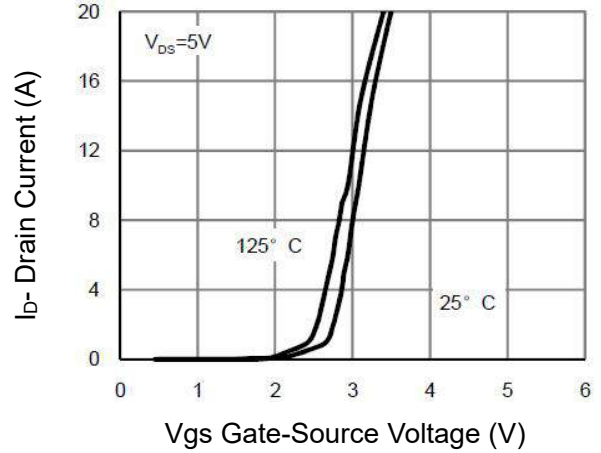


Figure 2 Transfer characteristics

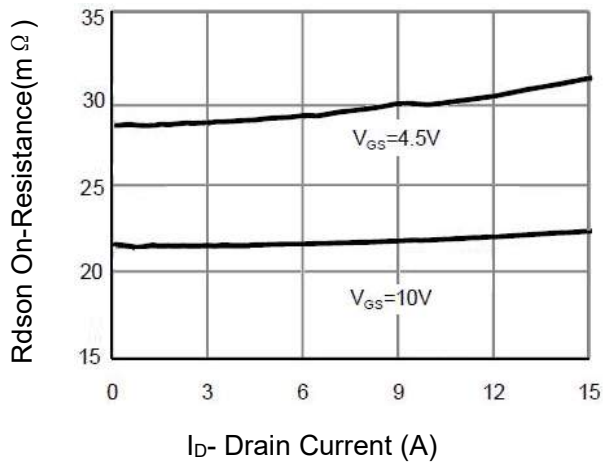


Figure 3 Drain-source on-resistance

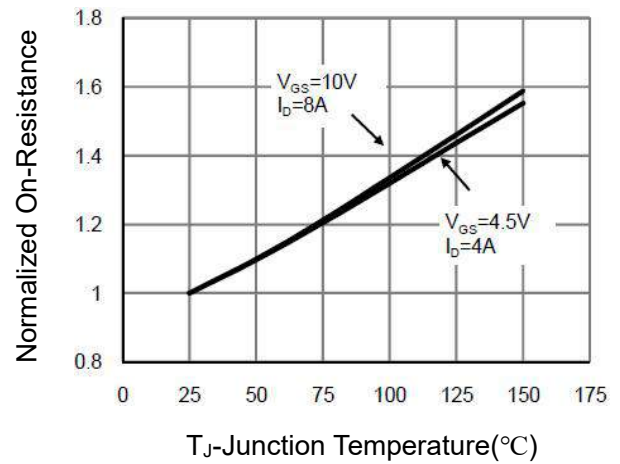


Figure 4 Drain-source on-resistance

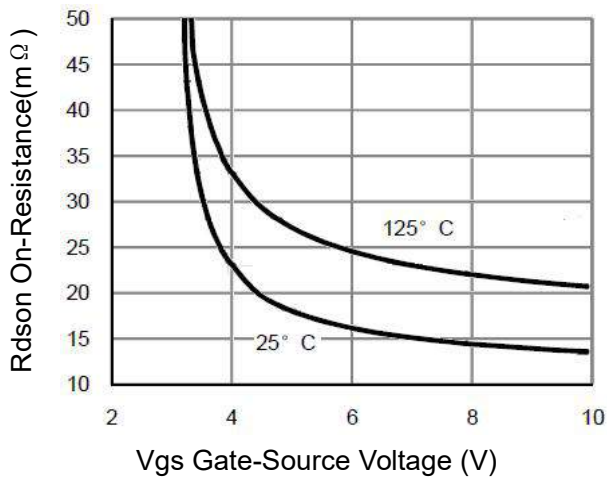


Figure 5 $R_{DS(on)}$ vs v_{gs}

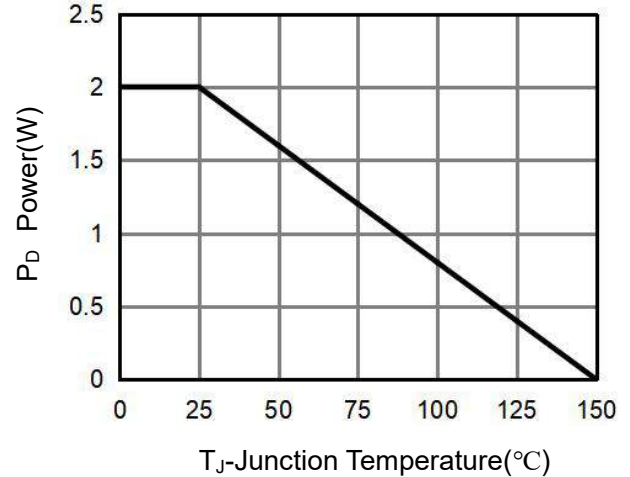


Figure 6 Power dissipation

■ TYPICAL CHARACTERISTICS(Cont.)

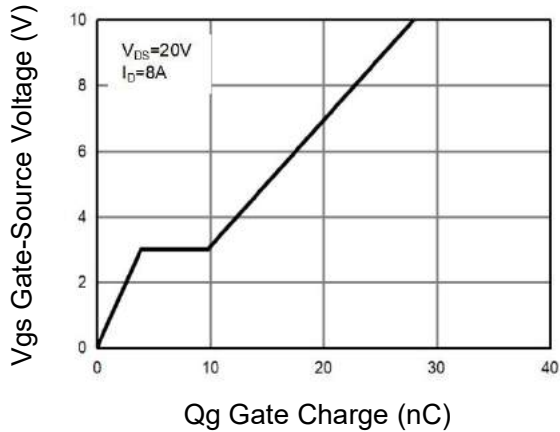


Figure 7 Gate charge

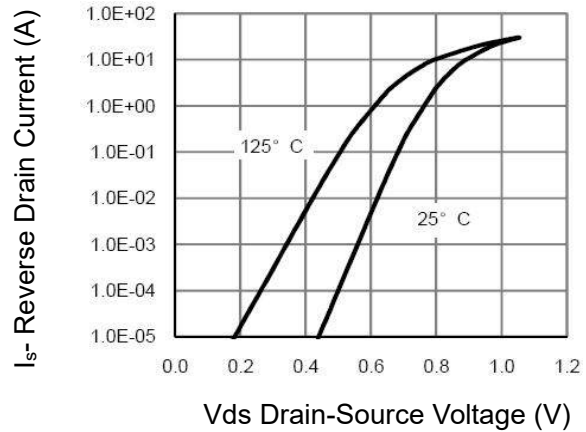


Figure 8 Source-drain diode forward

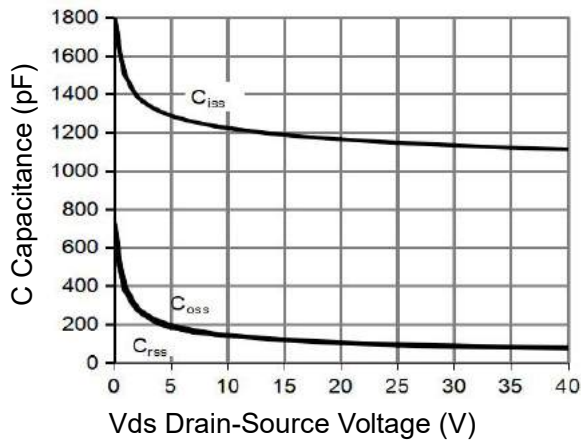


Figure 9 Capacitance vs vds

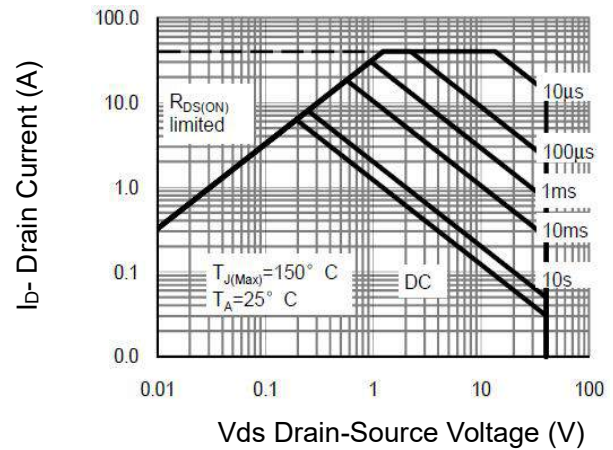


Figure 10 Safe operation area

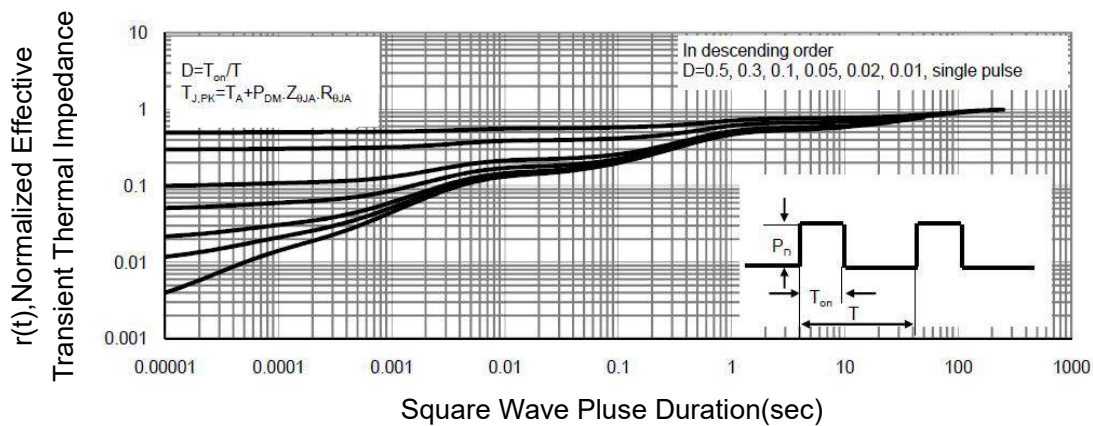
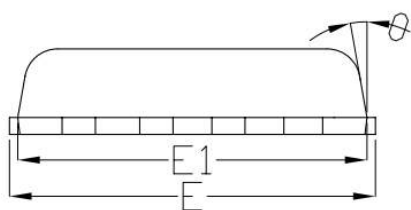
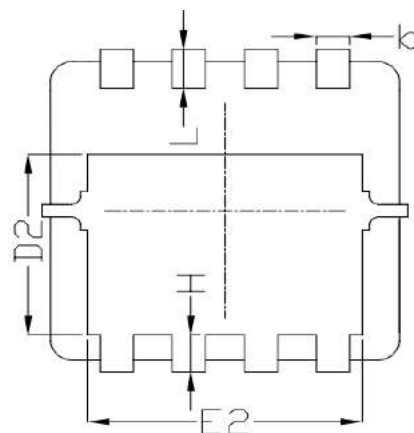
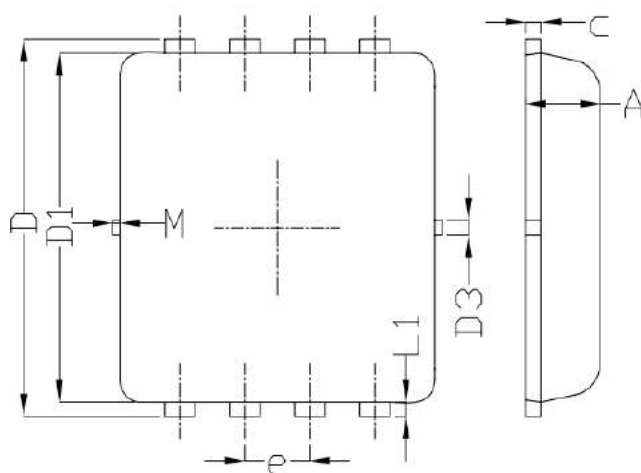
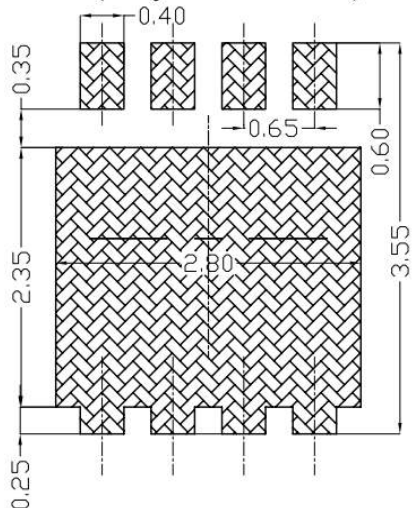


Figure 11 Normalized maximum transient thermal impedance

■ PDFN3X3-8L Package Mechanical Data



Land Pattern
(Only for Reference)



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