

PRODUCT CHARACTERISTICS

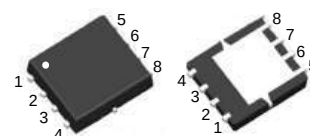
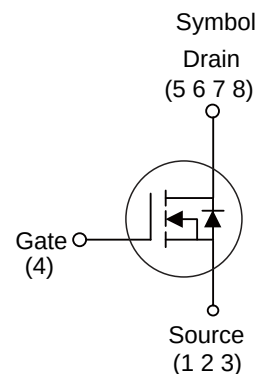
V_{DS}	20V
$R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$)	2.8m Ω
$R_{DS(ON)}$ Typ(@ $V_{GS}=2.5V$)	3.5m Ω
I_D	110A

APPLICATIONS

- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating



PDFN3X3

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT2124J	PDFN3X3	5000 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current Continuous(@ $V_{GS}=10V, T_A=25^{\circ}C$)	I_D	110	A
Drain Current Continuous(@ $V_{GS}=10V, T_A=100^{\circ}C$)	I_D	65	A
Drain Current Pulsed	I_{DM}	440	A
Avalanche Energy *	E_{AS}	210	mJ
Power Dissipation	P_D	71	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	1.7	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=12V, V_G=10V, L=0.5mH, R_g=25\Omega$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	20	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
Gate to Source Forward Leakage	I _{GSS(F)}	V _{DS} =0V, V _{GS} =+12V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{DS} =0V, V _{GS} =-12V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =20 A	-	2.8	3.5	mΩ
		V _{GS} =2.5V, I _D =10 A	-	3.5	5	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.3	0.66	1.2	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	2.2	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	-	18	-	S
Input Capacitance	C _{iss}	V _{DS} =12V, V _{GS} =0V f=1.0MHz	-	3489	-	pF
Output Capacitance	C _{oss}		-	450	-	pF
Reverse Transfer Capacitance	C _{rss}		-	420	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =4.5V, V _{DS} =10V I _D =30 A ,R _G =3 Ω	-	20	-	ns
Rise Time	t _r		-	47	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	117	-	ns
Fall Time	t _f		-	120	-	ns
Total Gate Charge	Q _g	I _D =30 A, V _{DS} =10V V _{GS} =4.5V	-	64	-	nC
Gate to Source Charge	Q _{gs}		-	12	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	19	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	110	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	440	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.69	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _J =25 °C	-	22	-	ns
Reverse Recovery Charge	Q _{rr}		dI /dt=100A/μs	-	12	-

■ TYPICAL CHARACTERISTICS

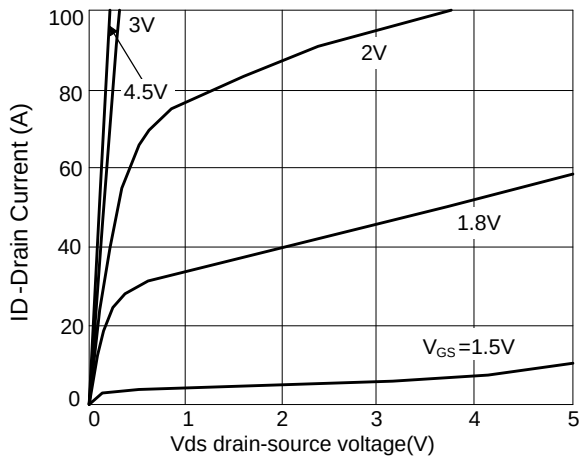


Figure 1 Output characteristics

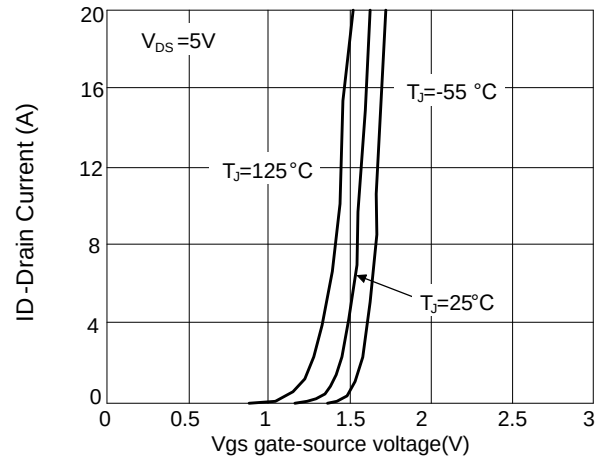


Figure 2 Transfer characteristics

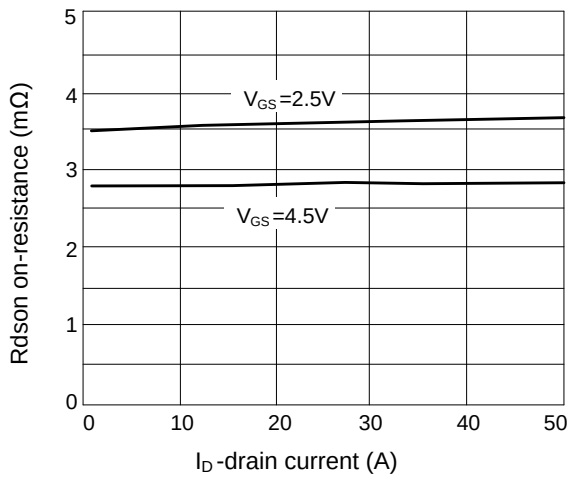


Figure 3 Rdson-drain current

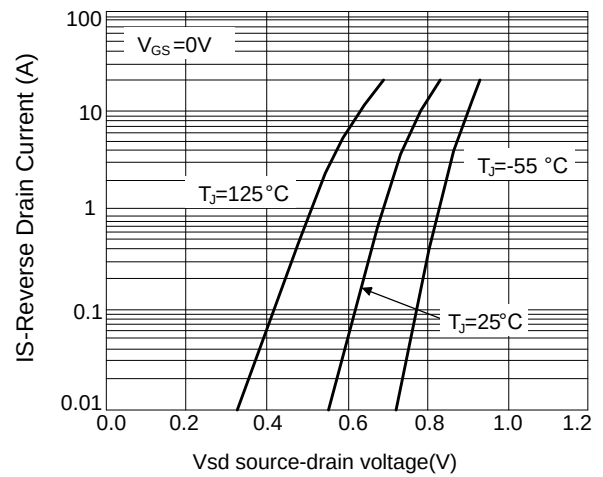


Figure 4 Body diode characteristics

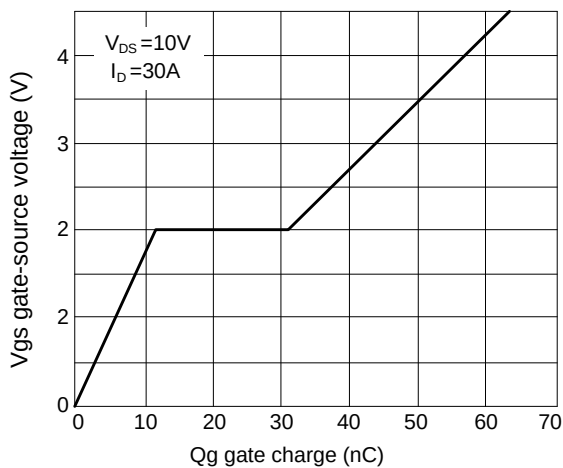


Figure 5 Gate charge

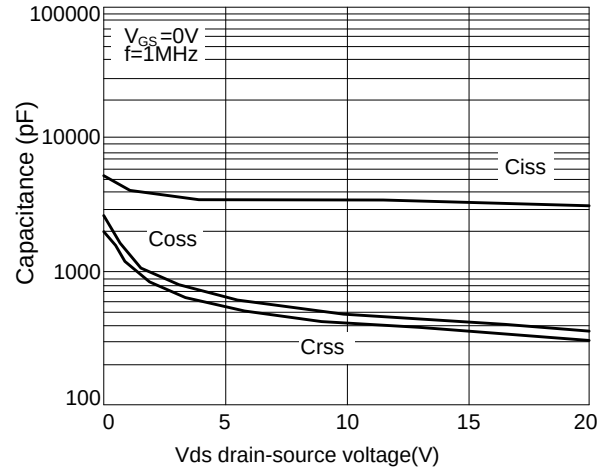


Figure 7 Capacitance vs vds

■ TYPICAL CHARACTERISTICS(Cont.)

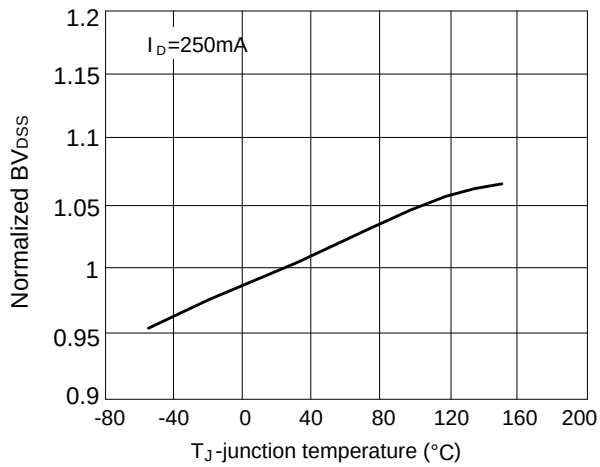


Figure 7 Normalized breakdown voltage vs. junction temperature

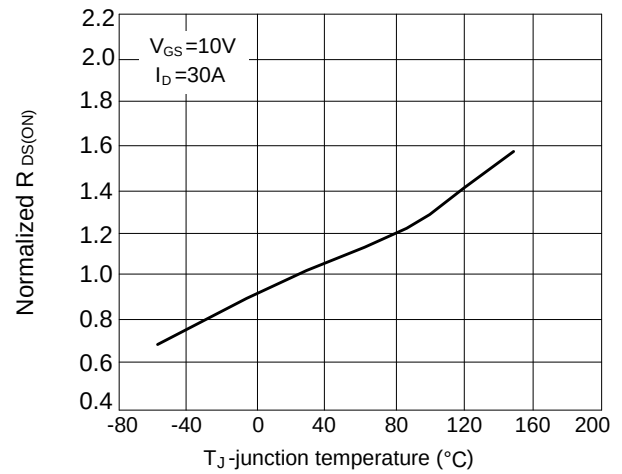


Figure 8 Normalized on-resistance vs. junction temperature

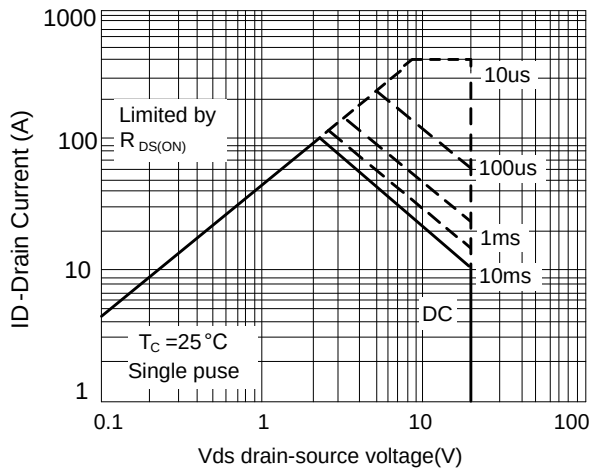


Figure 9 Safe operation area

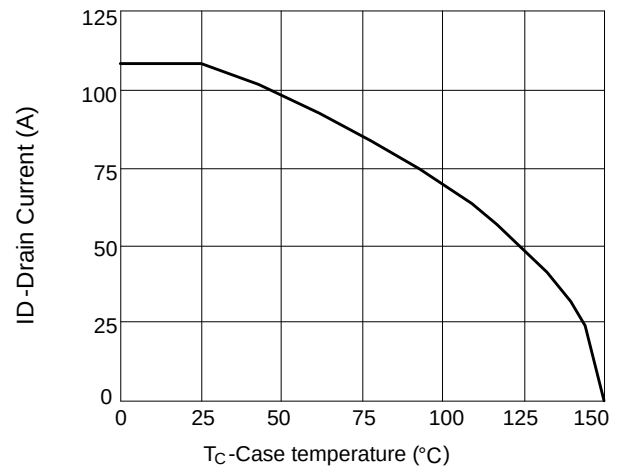
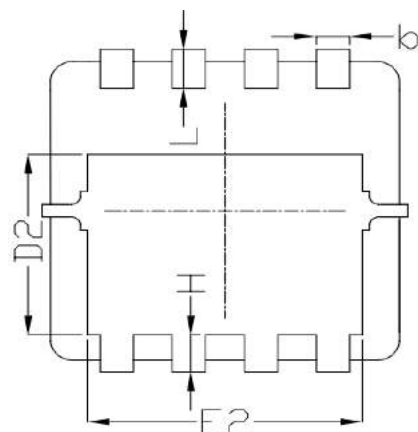
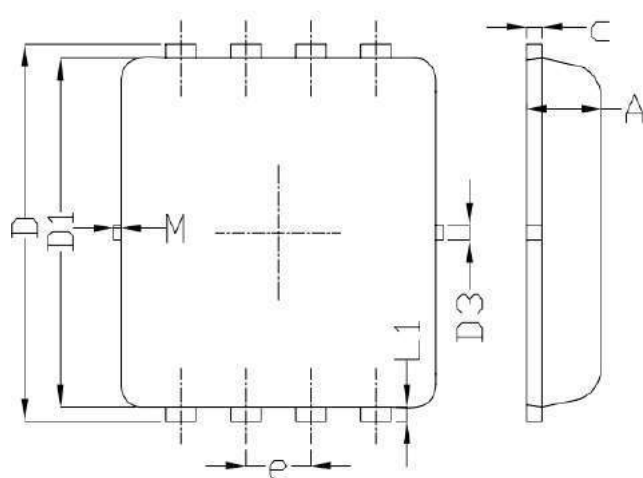
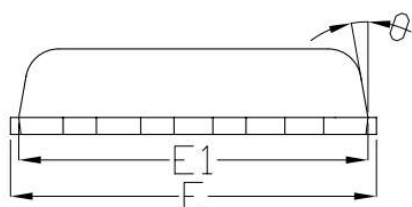


Figure 10 Maximum continuous drain current vs. case temperature

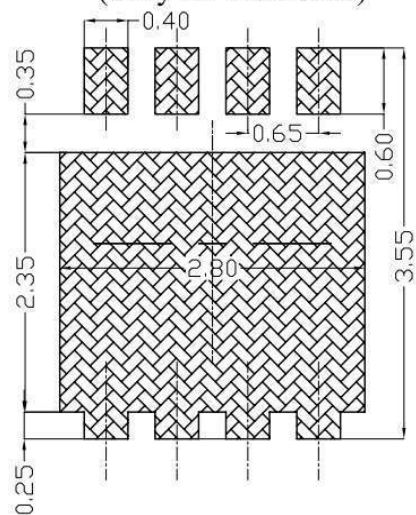
■ PDFN3X3 PACKAGE OUTLINE DIMENSIONS



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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			