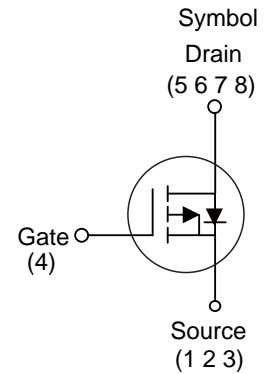


■ PRODUCT CHARACTERISTICS

V_{DSS}	-40V
$R_{DS(ON) Typ} (@V_{GS}=-10V)$	11m Ω
$R_{DS(ON) Typ} (@V_{GS}=-4.5V)$	14 m Ω
I_D	-30A

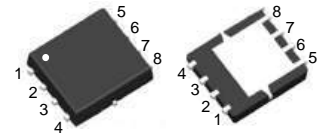


■ APPLICATIONS

- * 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	MOT4712J	PDFN3X3	5000 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	-40	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current Continuous ($@V_{GS}=-10V, T_A=25^{\circ}C$)	I_D	-30	A
Drain Current Continuous ($@V_{GS}=-10V, T_A=100^{\circ}C$)	I_D	-24	A
Drain Current Pulsed	I_{DM}	-120	A
Avalanche Energy *	E_{AS}	324	mJ
Power Dissipation	P_D	20	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}	6.25	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$

■ 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_{DS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-40	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=-40\text{V}, V_{GS}=0\text{V}$	-	-	-1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-20\text{A}$	-	11	14	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-10\text{A}$	-	14	18	m Ω
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1	-1.55	-2.5	V
Dynamic characteristics						
Gate Resistance	R_g	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1.0\text{MHz}$	-	5.7	-	Ω
Forward Transconductance	g_{fs}	$V_{DS}=-10\text{V}, I_D=-3\text{A}$	-	13	-	S
Input Capacitance	C_{iss}	$V_{DS}=-20\text{V}, V_{GS}=0\text{V}$ $f=1.0\text{MHz}$	-	3300	-	pF
Output Capacitance	C_{oss}		-	240	-	pF
Reverse Transfer Capacitance	C_{rss}		-	220	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=-10\text{V}, V_{DS}=-20\text{V},$ $I_D=-20\text{A}, R_G=2.4\Omega$	-	10	-	ns
Rise Time	t_r		-	82	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	93	-	ns
Fall Time	t_f		-	74	-	ns
Total Gate Charge	Q_g	$I_D=-20\text{A}, V_{DS}=-20\text{V}$ $V_{GS}=-10\text{V}$	-	68	-	nC
Gate to Source Charge	Q_{gs}		-	10	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	14	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	-30	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	-120	A
Diode Forward Voltage	V_{SD}	$I_{SD}=-1\text{A}, V_{GS}=0\text{V}$	-	-0.73	-1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-20\text{A}, T_J=25^{\circ}\text{C}$ $di/dt=100\text{A}/\mu\text{s}$	-	20	-	ns
Reverse Recovery Charge	Q_{rr}		-	13	-	nC

■ TYPICAL CHARACTERISTICS

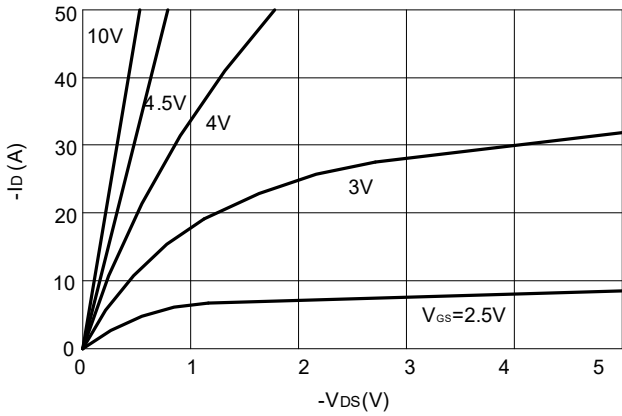


Figure1: Output Characteristics

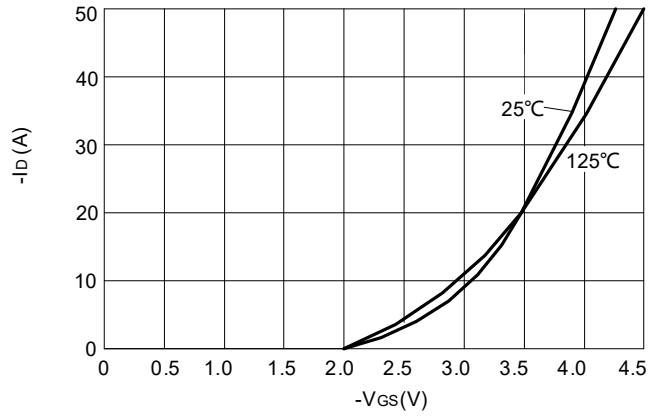


Figure2: Typical Transfer Characteristics

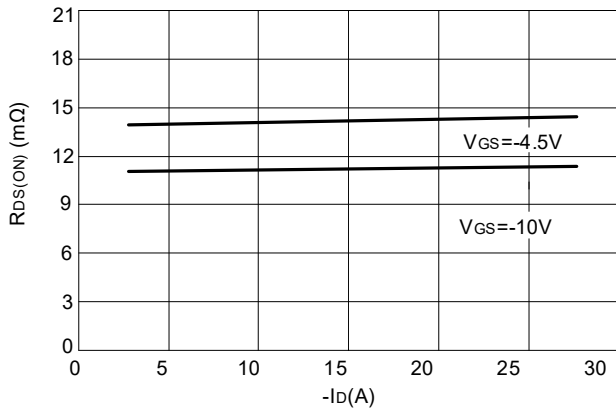


Figure3: On-resistance vs. Drain Current

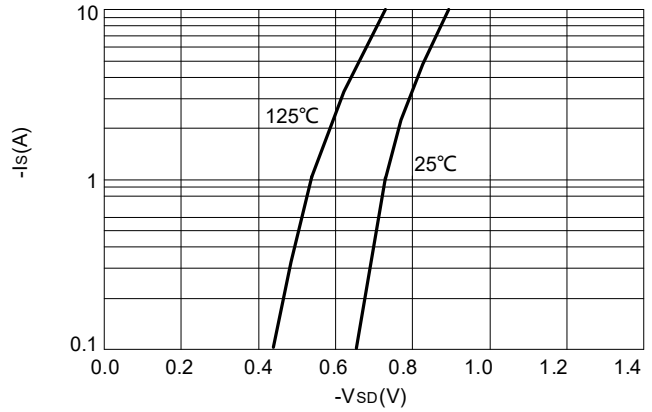


Figure4: Body Diode Characteristics

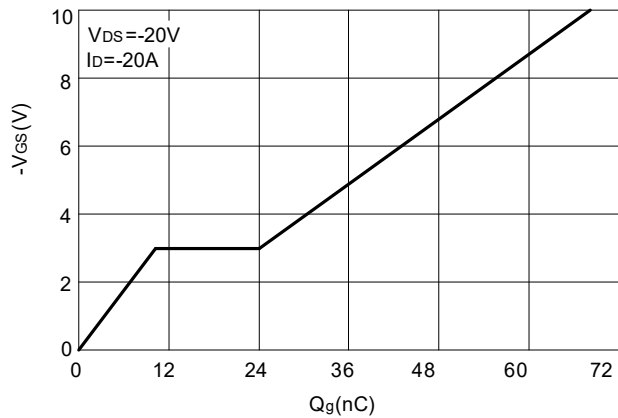


Figure5: Gate Charge Characteristics

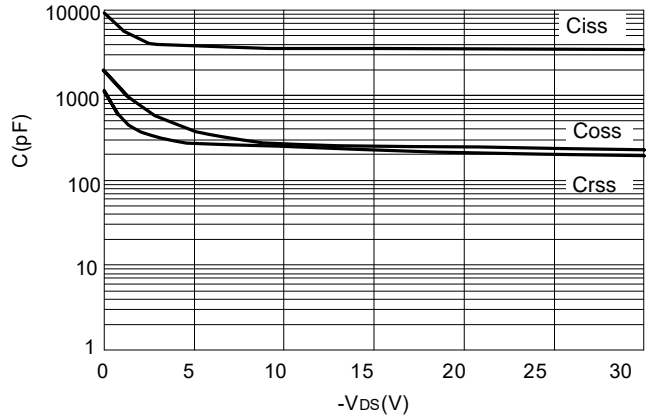


Figure6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

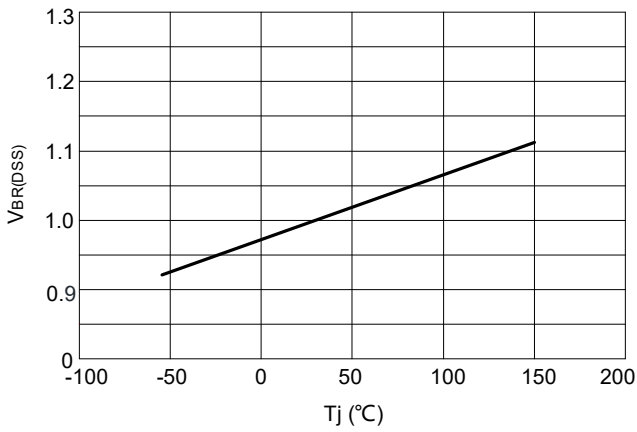


Figure7 : Normalized Breakdown Voltage vs. Junction Temperature

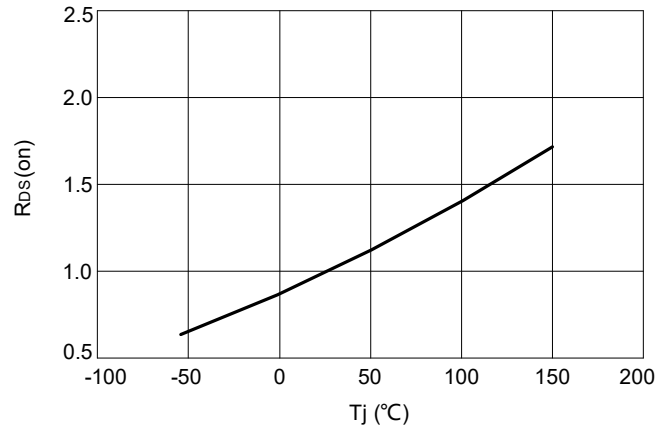


Figure8 : Normalized on Resistance vs. Junction Temperature

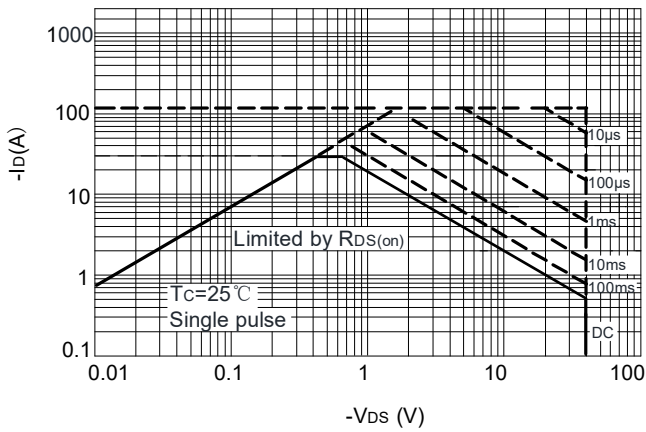


Figure9 : Maximum Safe Operating Area

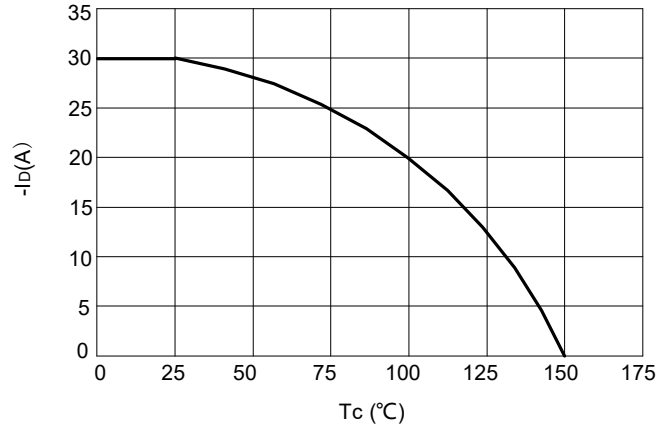
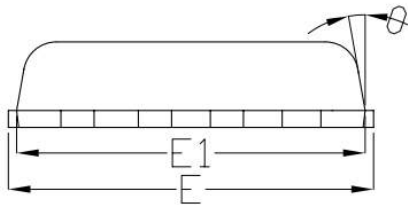
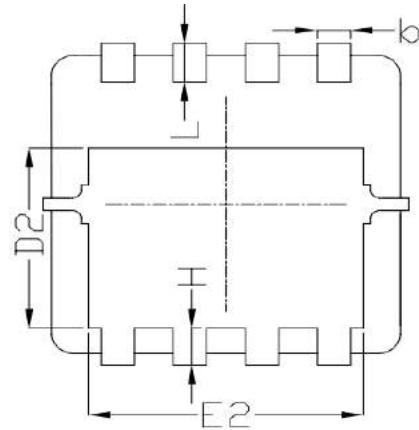
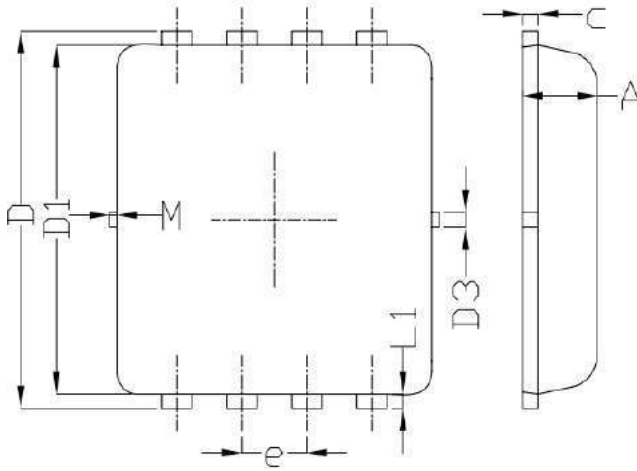
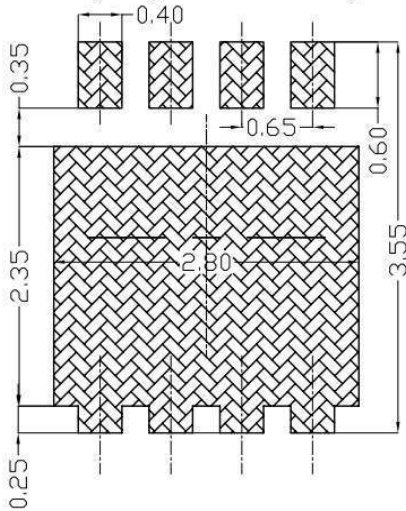


Figure10: Maximum Continuous Drain Current vs. Case Temperature

■ PDFN3X3 PACKAGE OUTLINE DIMENSIONS



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			