

■ PRODUCT CHARACTERISTICS

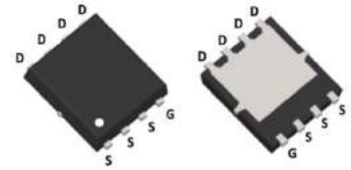
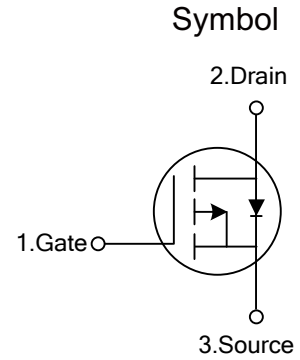
VDSS	-30V
$R_{DS(on)typ}(V_{GS} = -10V)$	7.4mΩ
$R_{DS(on)typ}(V_{GS} = -4.5V)$	11mΩ
ID	-30A

■ APPLICATIONS

- \* Power management
- \* Load switch

■ FEATURES

- \* High density cell design for ultra low Rdson
- \* Low gate charge
- \* Pb-free lead plating



PDFN3X3-8L

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen- Free	Halogen		
N/A	MOT3390J	PDFN3X3	5000 pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C Unless Otherwise Noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DSS</sub>	-30	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Drain Current	Continuous	I <sub>D</sub>	-30
	Pulsed (Note 1)	I <sub>DM</sub>	-80
Drain-Source diode forward current	I <sub>S</sub>	-30	A
Power Dissipation	P <sub>D</sub>	40	W
Operating Junction Temperature	T <sub>J</sub>	-55-150	°C

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal resistance junction to ambient	θ <sub>JA</sub>	3.13	°C/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
On characteristics <sup>(Note 3)</sup>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-15A$	-	7.4	10	m $\Omega$
		$V_{GS}=-4.5V, I_D=-10A$	-	11	15	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-15A$	30	-	-	S
Dynamic characteristics <sup>(Note 4)</sup>						
Input Capacitance	$C_{ISS}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	4222	-	PF
Output Capacitance	$C_{OSS}$		-	480.5	-	PF
Reverse Transfer Capacitance	$C_{RSS}$		-	448.6	-	PF
Switching characteristics <sup>(Note 4)</sup>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-15A,$ $V_{GS}=-10V, R_{GEN}=3\Omega$	-	15	-	nS
Turn-on Rise Time	$t_r$		-	11	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	44	-	nS
Turn-Off Fall Time	$t_f$		-	21	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-15A, V_{GS}=-10V$	-	81.3	-	nC
Gate-Source Charge	$Q_{gs}$		-	13.8	-	nC
Gate-Drain Charge	$Q_{gd}$		-	8.3	-	nC
Drain-source diode characteristics						
Diode Forward Voltage <sup>(Note 3)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-30A$	-	-	-1.2	V

**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

■ TYPICAL CHARACTERISTICS

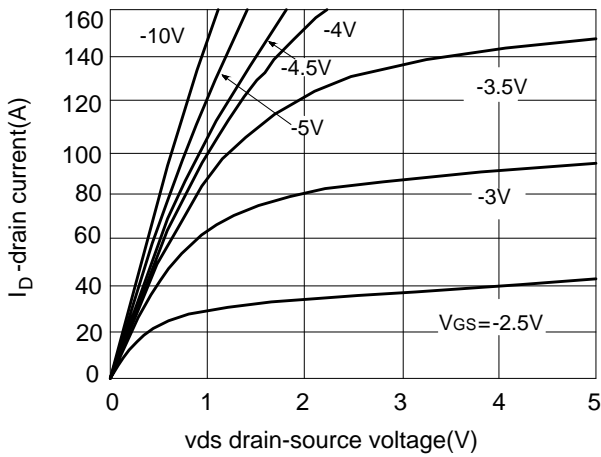


Fig.1 output characteristics

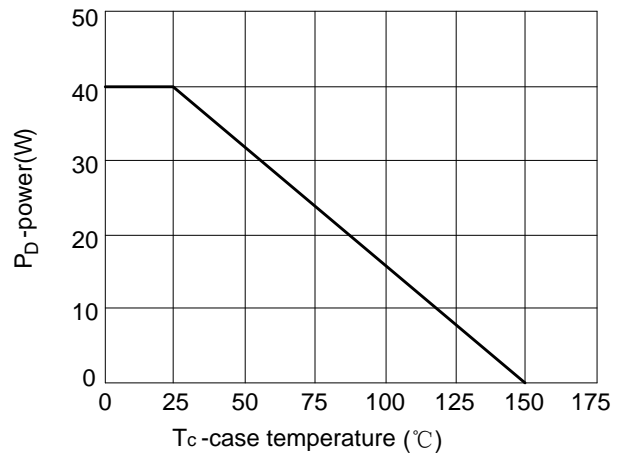


Fig.2 power dissipation

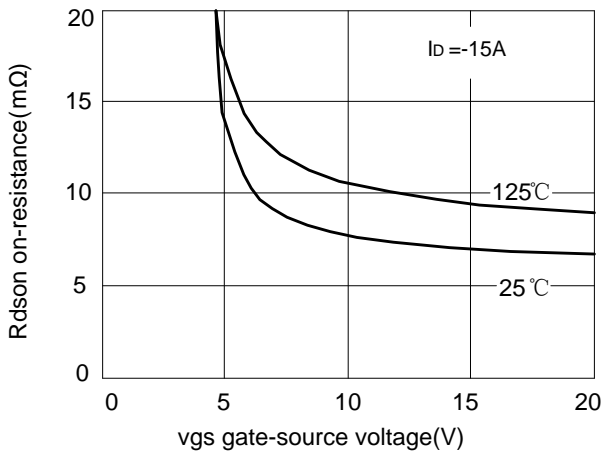


Fig.3 rdson vs vgs

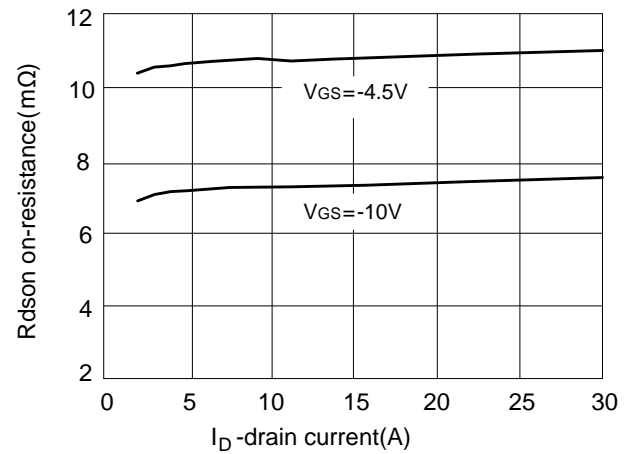


Fig.4 drain-source on-resistance

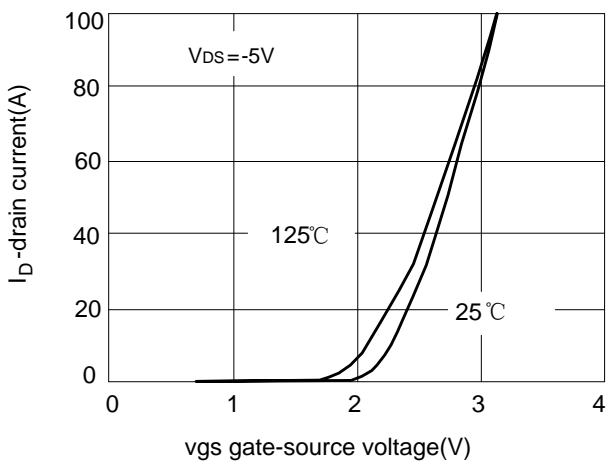


Fig.5 transfer characteristics

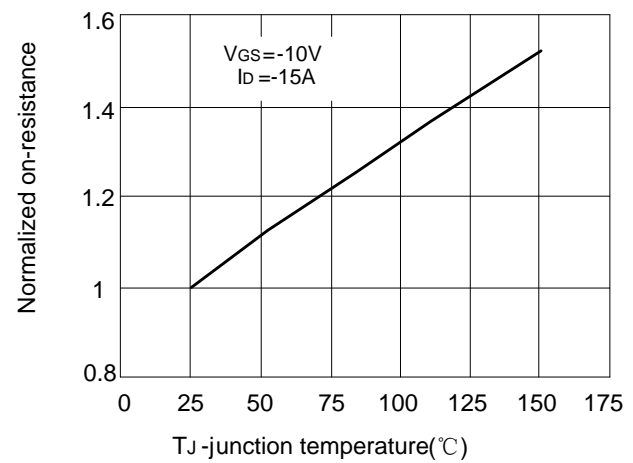


Fig.6 drain-source on-resistance

■ TYPICAL CHARACTERISTICS

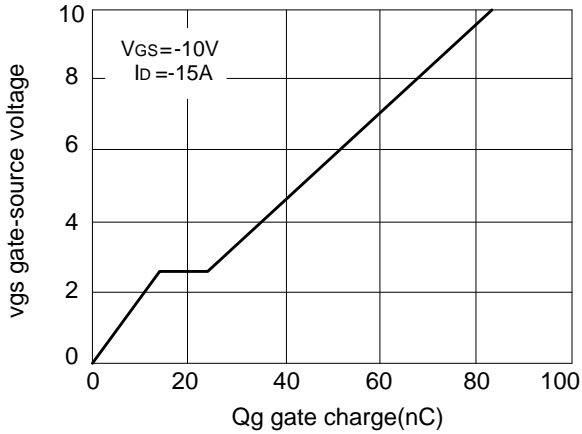


Fig.7 gate charge

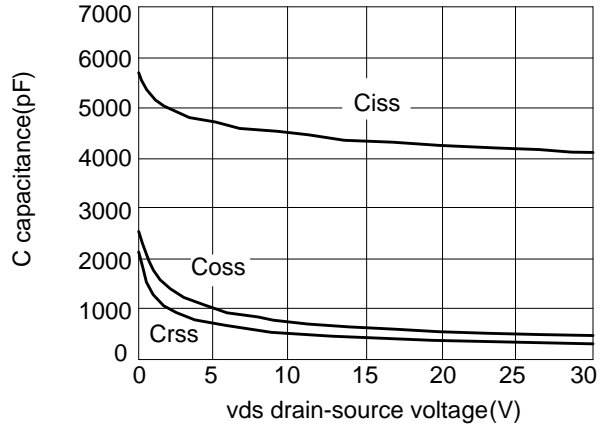


Fig.8 capacitance vs vds

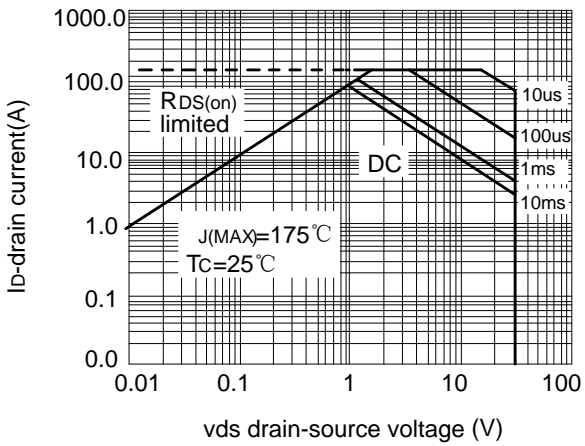


Fig.9 safe operation area

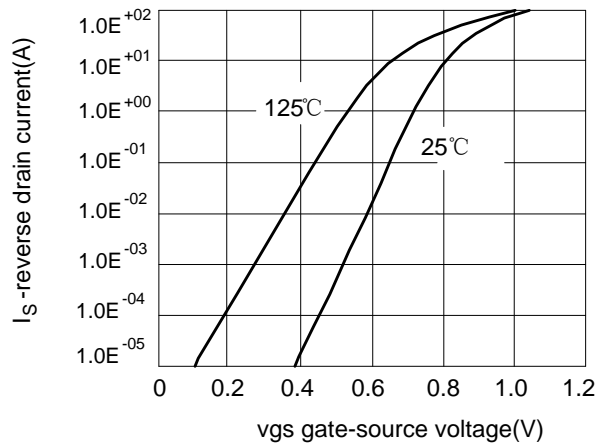


Fig.10 source-drain diode forward

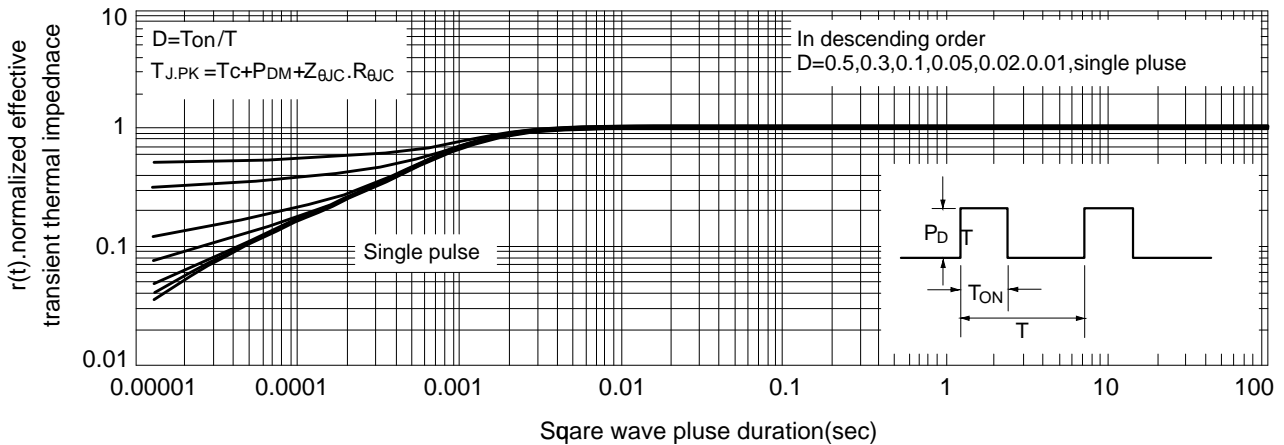
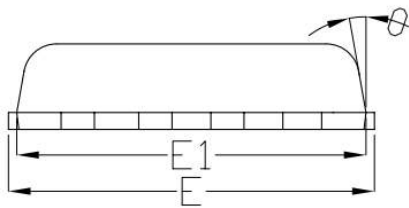
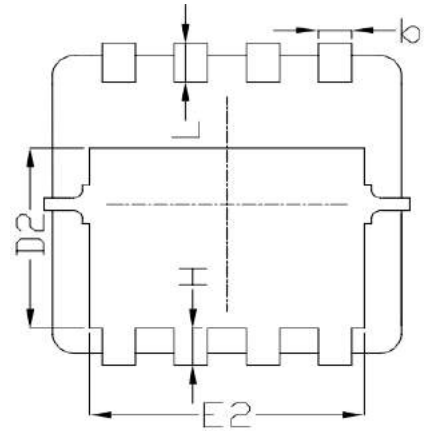
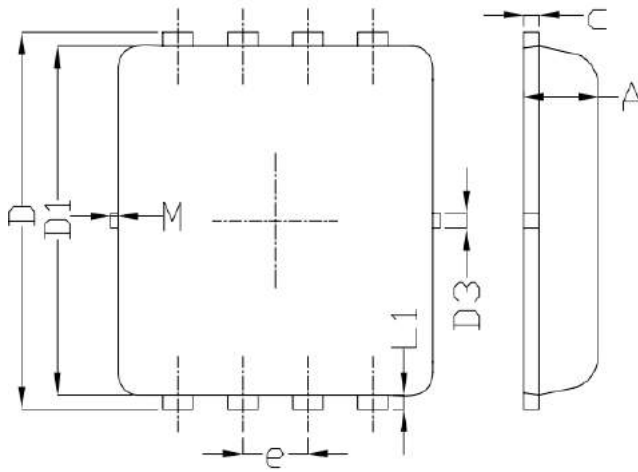
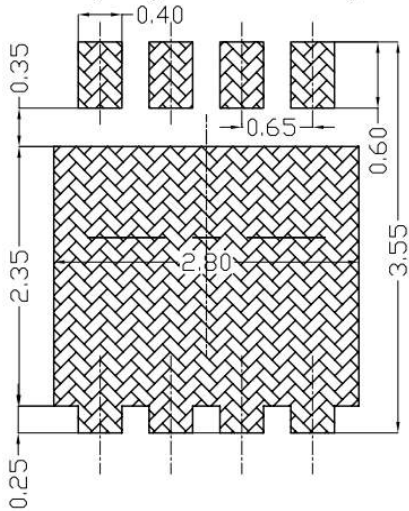


Fig.11 normalized maximum transient thermal impedance

■ PDFN3X3-8L Package Mechanical Data



Land Pattern  
(Only for Reference)



SYMBOL	DIMENSIONAL REQOMTS		
	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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