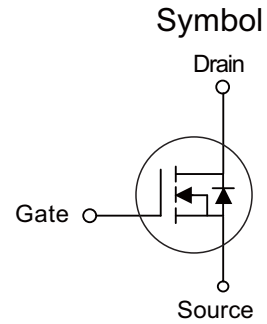


■ PRODUCT CHARACTERISTICS

VDSS	40V
$R_{DS(on)Typ}(@V_{GS}=4.5V)$	21mΩ
$R_{DS(on)Typ}(@V_{GS}=10V)$	17mΩ
ID	15A

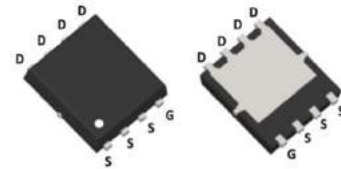


■ APPLICATIONS

- DC/DC Converter

■ FEATURES

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



PDFN3X3-8L

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4522J	PDFN3X3	5000 pieces /Reel

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$, 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	15	A
Drain Current-Continuous($T_C=100^{\circ}C$)	$I_D(100^{\circ}C)$	10.6	A
Pulsed Drain Current (Package Limited)	I_{DM}	70	A
Maximum Power Dissipation	P_D	3.1	W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	40	$^{\circ}C/W$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

■ 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}	$V_{GS}=0V, I_D=250\mu A$	40	45	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	-	17	22	m Ω
		$V_{GS}=4.5V, I_D=8A$	-	21	25	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=10A$	10	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V,$ $F=1.0MHz$	-	3090	-	PF
Output Capacitance	C_{oss}		-	328	-	PF
Reverse Transfer Capacitance	C_{rss}		-	273	-	PF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, R_L=2\Omega$ $V_{GS}=10V, R_G=3\Omega$	-	7	-	nS
Turn-on Rise Time	t_r		-	20	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	nS
Turn-Off Fall Time	t_f		-	19	-	nS
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=10A,$ $V_{GS}=10V$	-	60	-	nC
Gate-Source Charge	Q_{gs}		-	8.1	-	nC
Gate-Drain Charge	Q_{gd}		-	16.9	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=10A$	-	-	1.2	V
Diode Forward Current	I_S		-	-	15	A
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ\text{C}, I_F = 10A$ $di/dt = 100A/\mu s$	-	31	-	nS
Reverse Recovery Charge	Q_{rr}		-	33	-	nC

■ TYPICAL CHARACTERISTICS

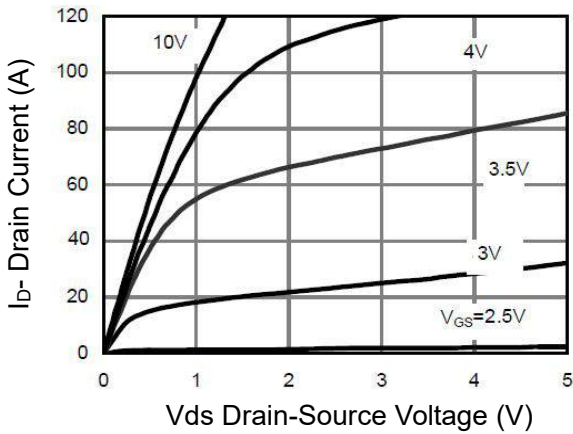


Figure 1 Output characteristics

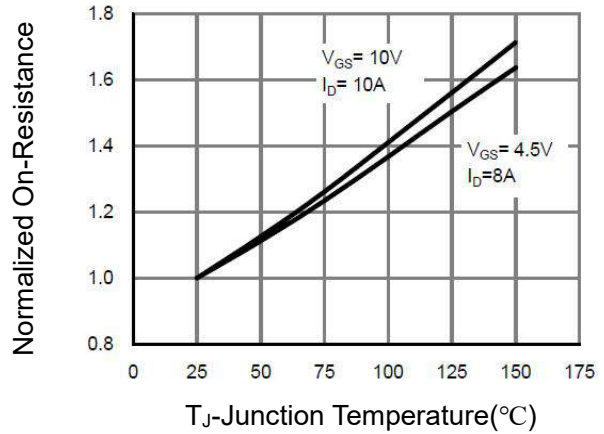


Figure 2 $R_{ds(on)}$ -junction temperature

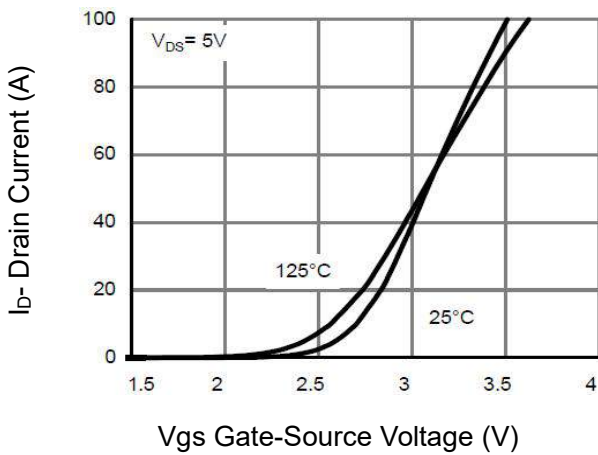


Figure 3 Transfer characteristics

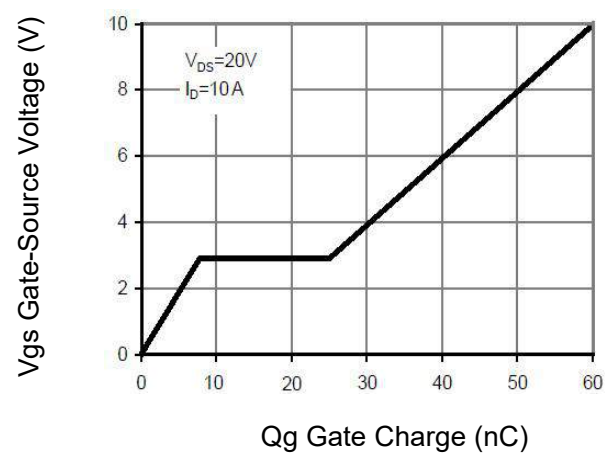


Figure 4 Gate charge

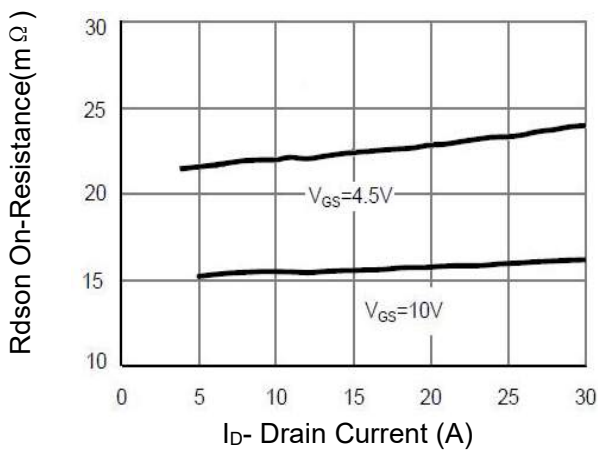


Figure 5 $R_{ds(on)}$ -drain current

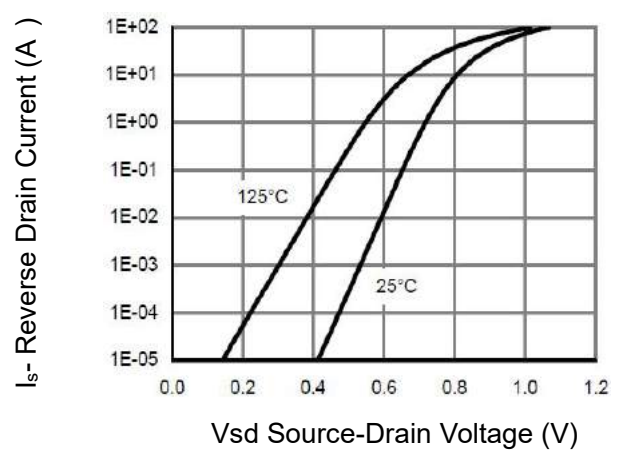


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

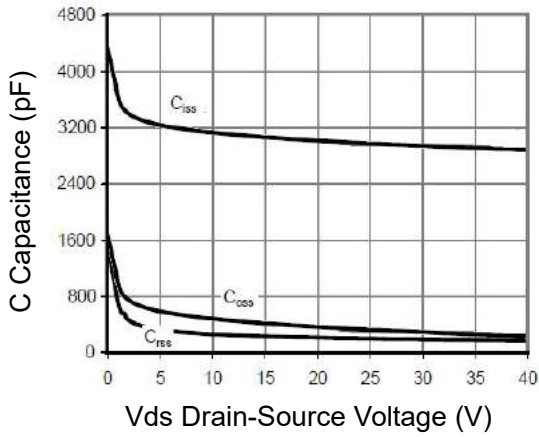


Figure 7 Capacitance vs vds

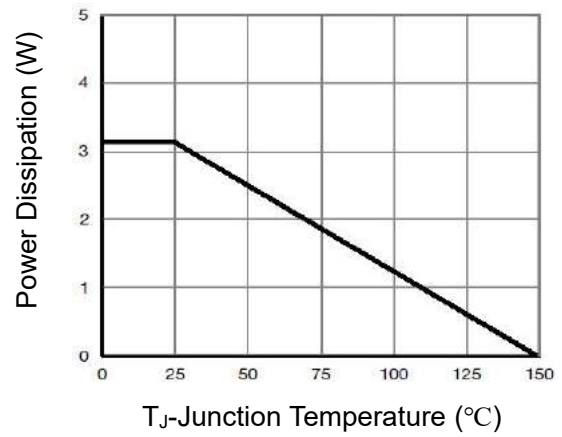


Figure 8 Power de-rating

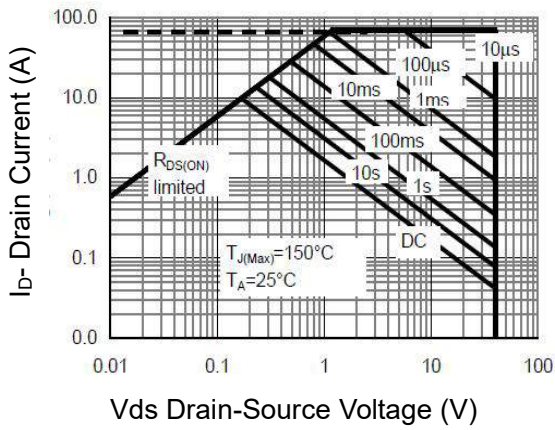


Figure 9 Safe operation area

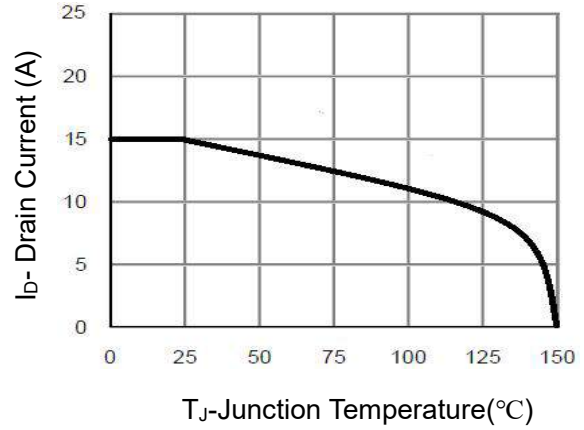


Figure 10 Current de-rating

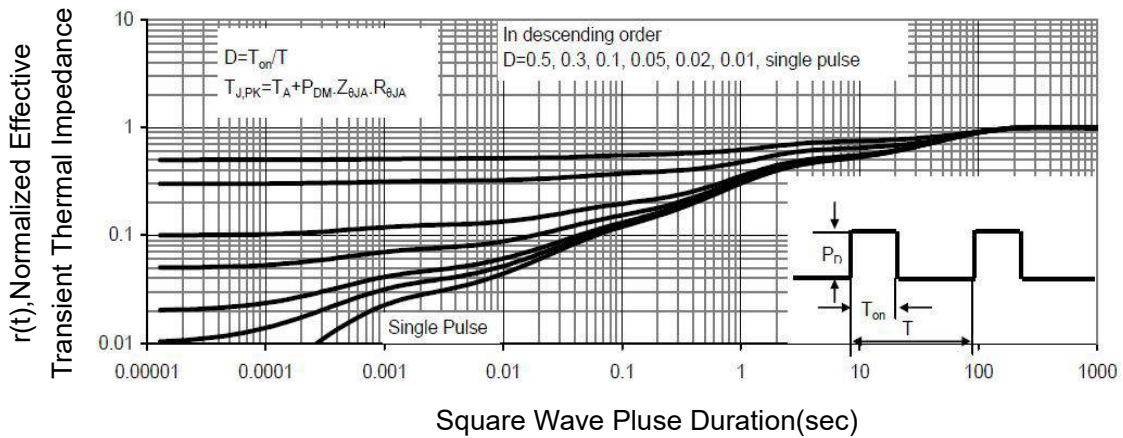
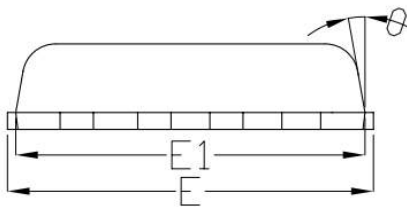
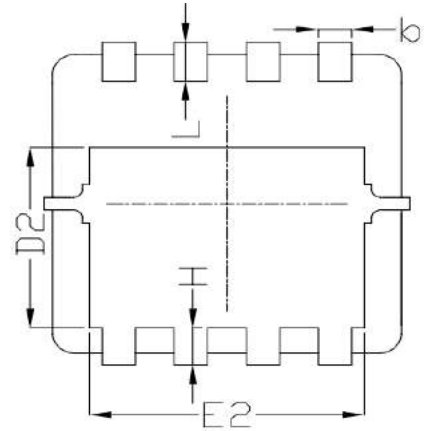
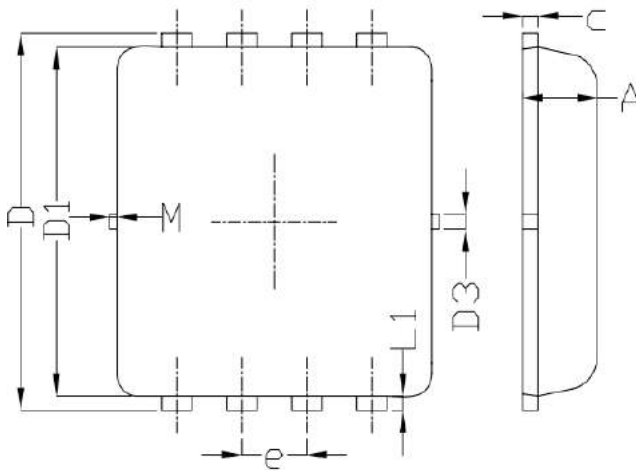
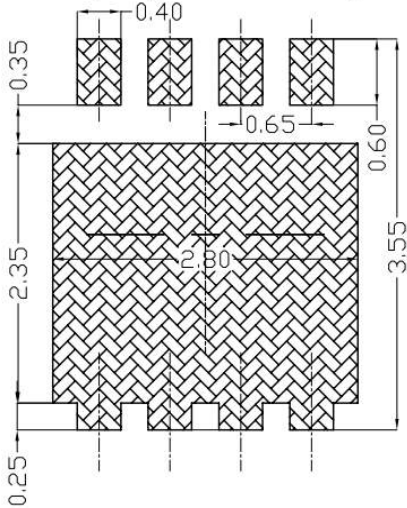


Figure 11 Normalized maximum transient thermal impedance

■ 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			