

■ PRODUCT CHARACTERISTICS

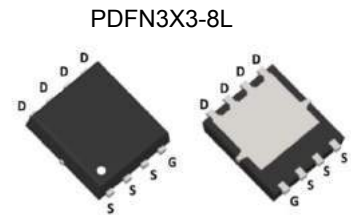
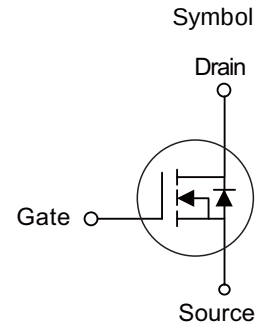
V_{DS}	30V
$R_{DS(ON)} \text{ typ} (@V_{GS}=10V)$	7.5m Ω
$R_{DS(ON)} \text{ typ} (@V_{GS}=4.5V)$	14m Ω
I_D	25A

■ APPLICATIONS

- * SMPS and general purpose applications
- * Hard switched and high frequency circuits
- * Uninterruptible power supply

■ FEATURES

- * High density cell design for ultra low $R_{DS(on)}$
- * Fully characterized avalanche voltage and current
- * Excellent package for good heat dissipation
- * Special process technology for high ESD capability



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen Free	Halogen		
N/A	MOT3510J	PDFN3X3	5000pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS($T_J=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain -source voltage	V_{DS}	30	V
Gate -source voltage	V_{GS}	± 20	V
Drain -current continuous	I_D	25	A
Drain -current continuous($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	17	A
Pulsed drain current	I_{DM}	50	A
Maximum power dissipation	P_D	25	W
Derating factor		0.2	W/ $^{\circ}\text{C}$
Single pulse avalanche energy	E_{AS}	70	mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

■ THERMAL CHARACTERISTIC

Thermal resistance,junction-to-case	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C/W}$
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■ 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	30	33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, 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	1.0	1.6	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A	-	7.5	10	mΩ
		V _{GS} =4.5V, I _D =10A	-	14	19	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A	16	-	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, F=1.0MHz	-	1530	-	PF
Output Capacitance	C _{oss}		-	250	-	PF
Reverse Transfer Capacitance	C _{rss}		-	198	-	PF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =10A V _{GS} =10V, R _{GEN} =1.8Ω	-	10	-	nS
Turn-on Rise Time	t _r		-	8	-	nS
Turn-Off Delay Time	t _{d(off)}		-	30	-	nS
Turn-Off Fall Time	t _f		-	5	-	nS
Total Gate Charge	Q _g	V _{DS} =15V, I _D =9A, V _{GS} =10V	-	32.3	-	nC
Gate-Source Charge	Q _{gs}		-	4.9	-	nC
Gate-Drain Charge	Q _{gd}		-	6.9	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A	-	-	1.2	V
Diode Forward Current	I _S		-	-	25	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 10A di/dt = 100A/μs	-	22	-	nS
Reverse Recovery Charge	Q _{rr}		-	12	-	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

■ TYPICAL CHARACTERISTICS

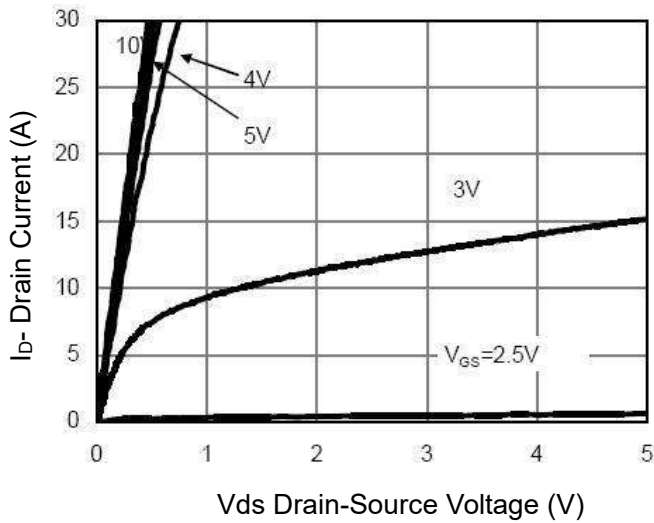


Figure 1 Output Characteristics

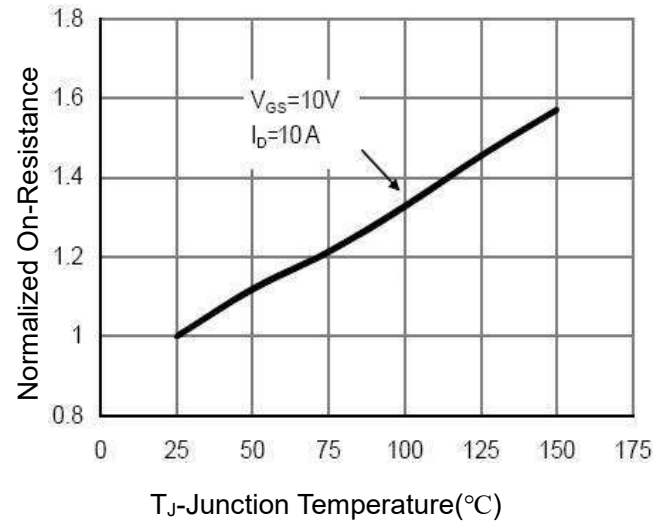


Figure 4 Rdson-Junction Temperature

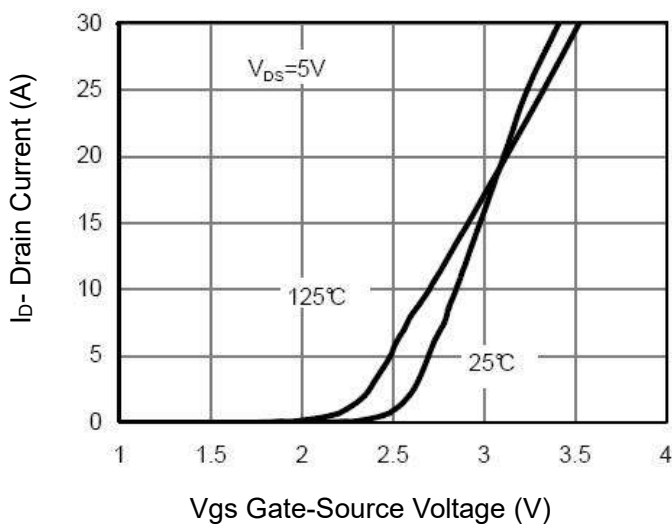


Figure 2 Transfer Characteristics

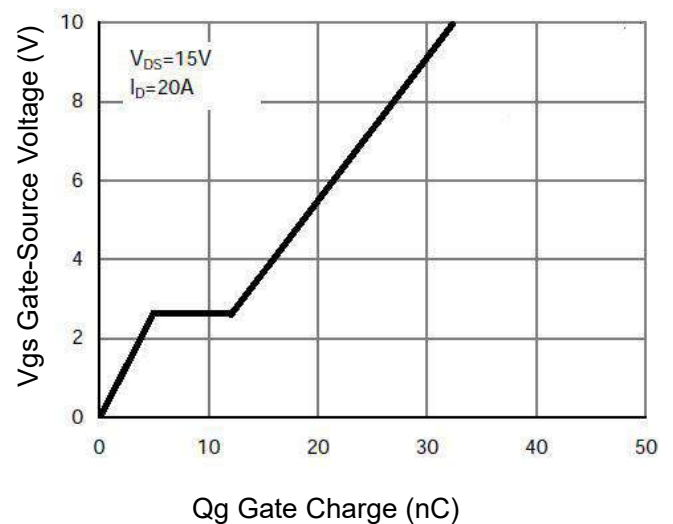


Figure 5 Gate Charge

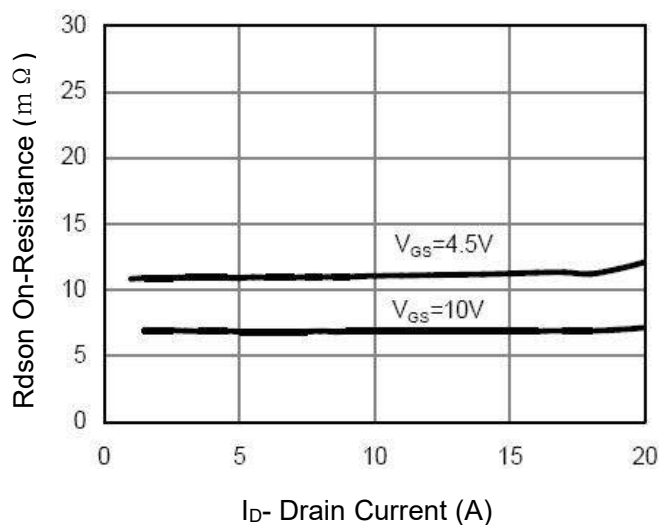


Figure 3 Rdson- Drain Current

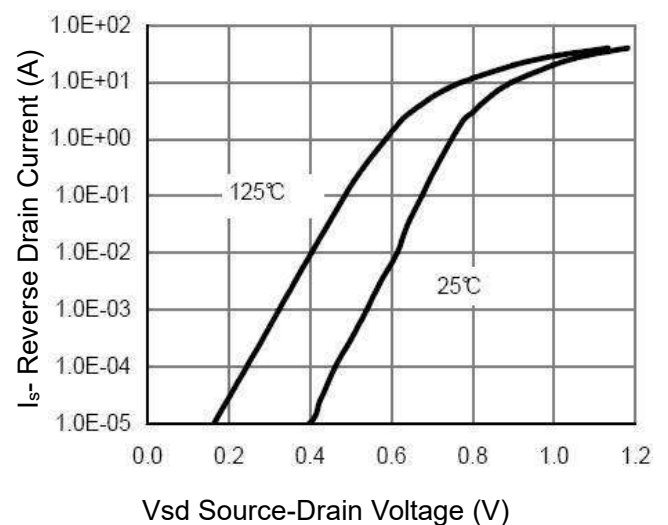
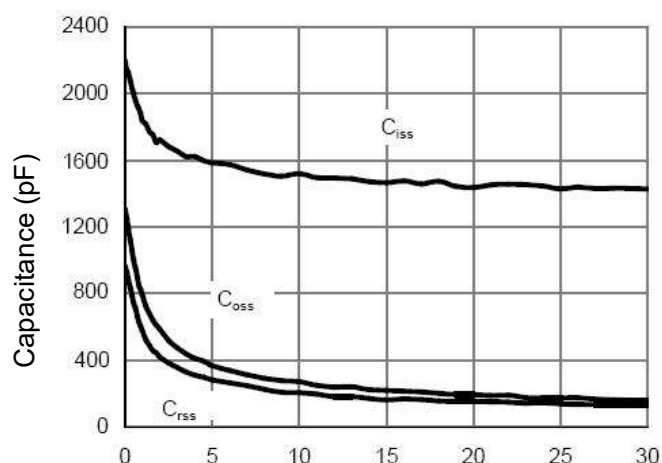
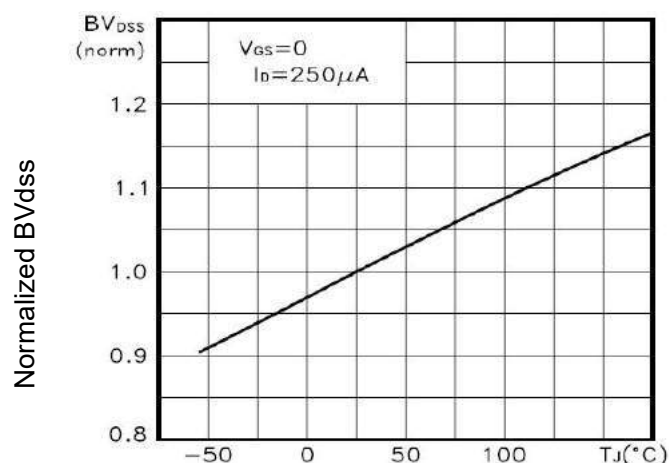


Figure 6 Source- Drain Diode Forward

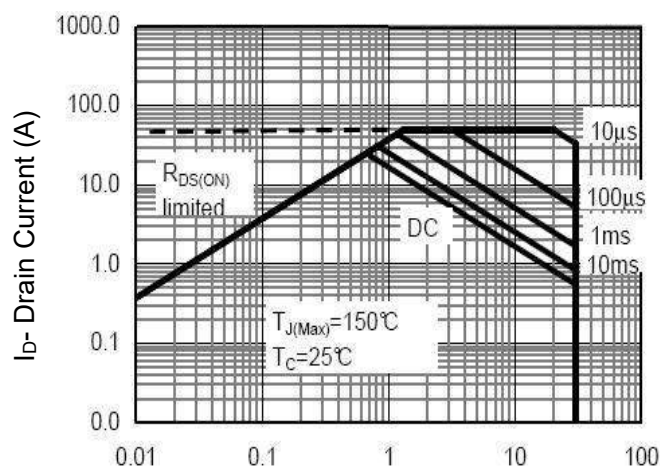
■ TYPICAL CHARACTERISTICS(Cont.)



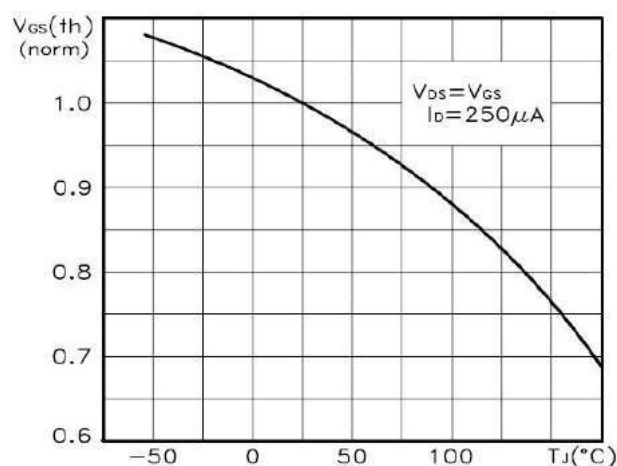
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



TJ-Junction Temperature(°C)
Figure 9 BVdss vs Junction Temperature



Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area



TJ-Junction Temperature(°C)
Figure 10 VGS(th) vs Junction Temperature

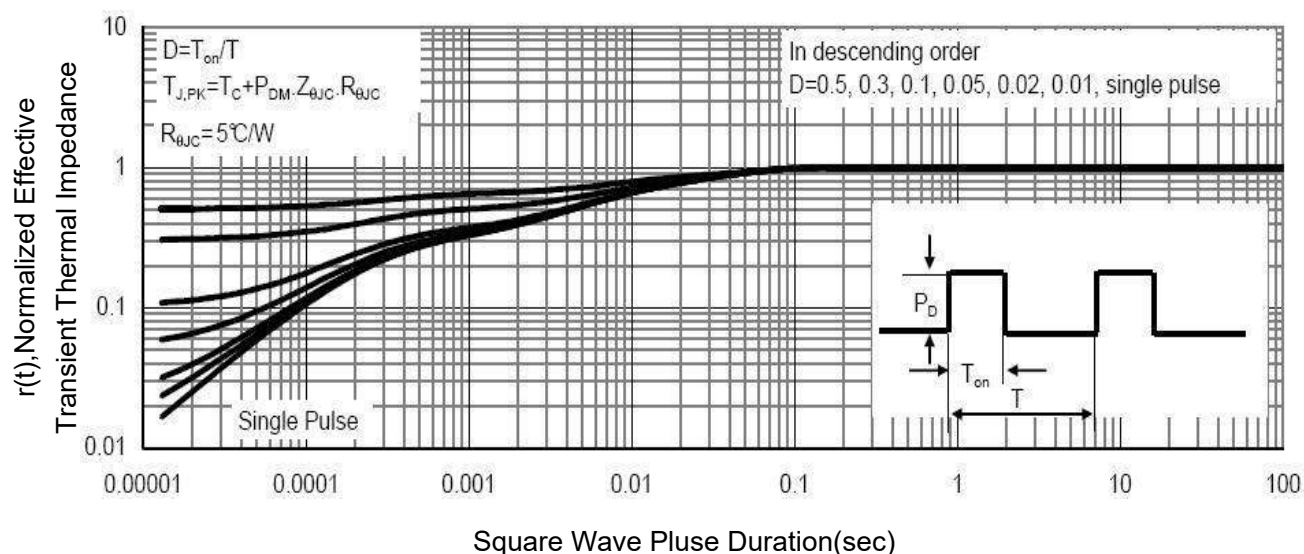
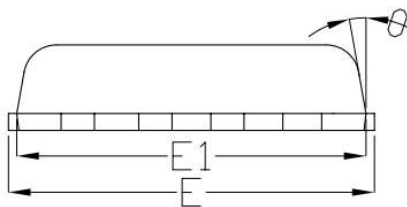
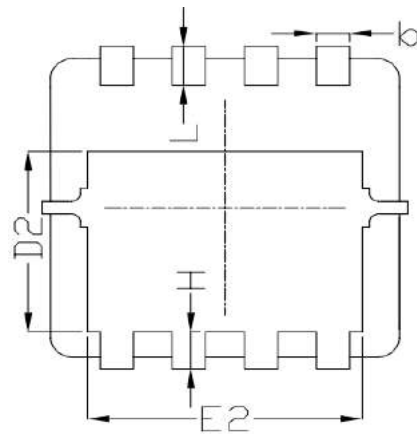
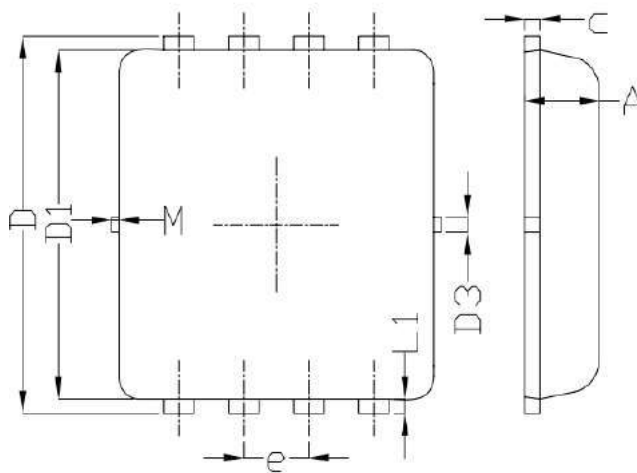
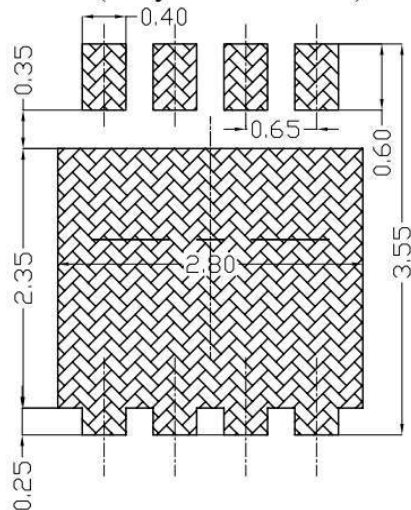


Figure 11 Normalized Maximum Transient Thermal Impedance

■ 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			