

■ PRODUCT CHARACTERISTICS

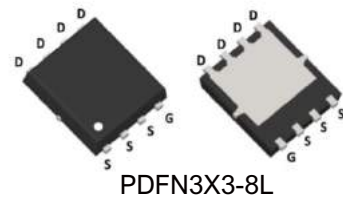
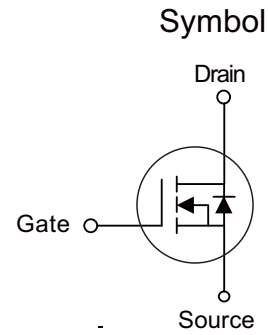
VDSS	30V
$R_{DS(on)typ}@V_{GS}=10V$	3.6mΩ
$R_{DS(on)typ}@V_{GS}=4.5V$	5.3mΩ
ID	85A

■ APPLICATIONS

- Portable Equipment and Battery Powered systems.
- Power Management in Notebook Computer

■ FEATURES

- Lower $R_{DS(ON)}$ to Minimize Conduction Losses
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested



■ ORDER INFORMATION

Order codes		Package	5000pieces/Reel
Halogen-Free	Halogen		
N/A	MOT3145J	PDFN3X3	

■ ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}C$ Unless Otherwise Noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Maximum Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to 150	$^{\circ}C$
Pulse Drain Current Tested	$T_c=25^{\circ}C$	$I_{DM}^{①}$	85	A
Continuous Drain Current	$T_c=25^{\circ}C$	I_D	76	A
	$T_c=100^{\circ}C$	I_D	48	A
Maximum Power Dissipation	$T_c=25^{\circ}C$	P_D	31	W
	$T_c=100^{\circ}C$	P_D	12.5	W
Avalanche Current, Single pulse	$L=0.1mH$	$I_{AS}^{②}$	28	A
Avalanche Energy, Single pulse	$L=0.1mH$	$E_{AS}^{②}$	39	mJ

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static electrical characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.1	1.6	2.1	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}^{④}$	$V_{GS}=10V, I_{DS}=20A$	-	3.6	4.5	m Ω
		$V_{GS}=4.5V, I_{DS}=18A$	-	5.3	7.2	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_{DS}=20A$	-	22	-	S
Dynamic characteristics ^⑤						
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=0V, \text{Freq.}=1\text{MHz}$	-	2.2	-	Ω
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=15V,$ $\text{Freq.}=1\text{MHz}$	-	1859	-	pF
Output Capacitance	C_{OSS}		-	260	-	pF
Reverse Transfer Capacitance	C_{rSS}		-	212	-	pF
Turn-on Delay Time	$t_{d(on)}$		-	9.6	-	nS
Turn-on Rise Time	t_r	$V_{GS}=10V, V_{DS}=15V,$ $I_D=1A, R_{GEN}=6\Omega$	-	23.4	-	nS
Turn-off Delay Time	$t_{d(off)}$		-	62.8	-	nS
Turn-off Fall Time	t_f		-	23	-	nS
Total Gate Charge	Q_g	$V_{GS}=4.5V, V_{DS}=25V, I_D=14A$	-	26	-	nC
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=25V,$ $I_D=14A$	-	48	-	nC
Gate-Source Charge	Q_{gs}		-	3.4	-	nC
Gate-Drain Charge	Q_{gd}		-	14	-	nC
Source-drain characteristics						
Diode Forward Voltage	$V_{SD}^{④}$	$I_{SD}=1A, V_{GS}=0V$	-	0.75	1.1	V
Reverse Recovery Time	T_{rr}	$I_F=2A, V_R=0V$ $dI_F/dt=100A/\mu S$	-	18.2	-	nS
Reverse Recovery Charge	Q_{rr}		-	9.2	-	nC

Note ④ : Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

Note ⑤ : Guaranteed by design, not subject to production testing.

■ TYPICAL CHARACTERISTICS

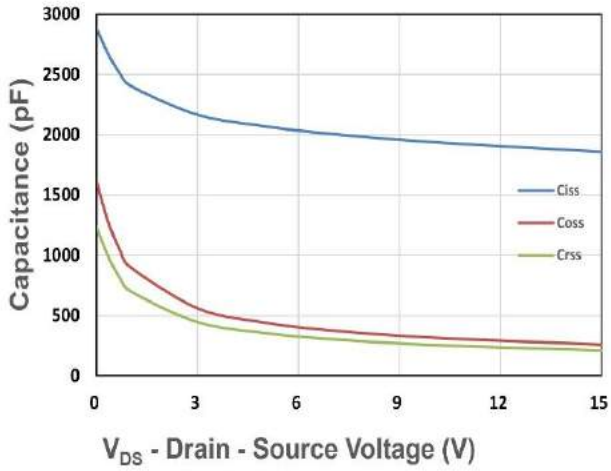


Figure 1. Capacitance

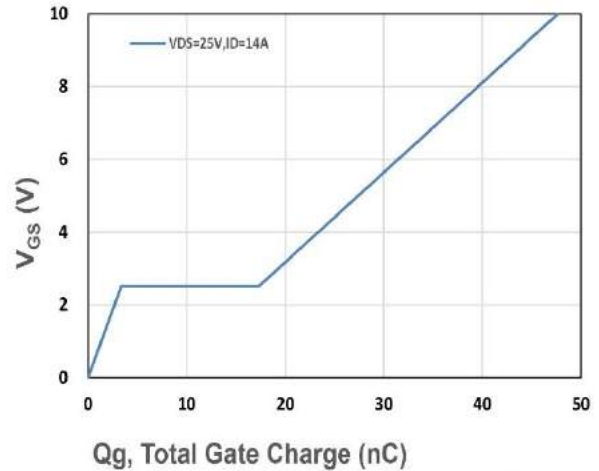


Figure 2. Gate Charge Characteristics

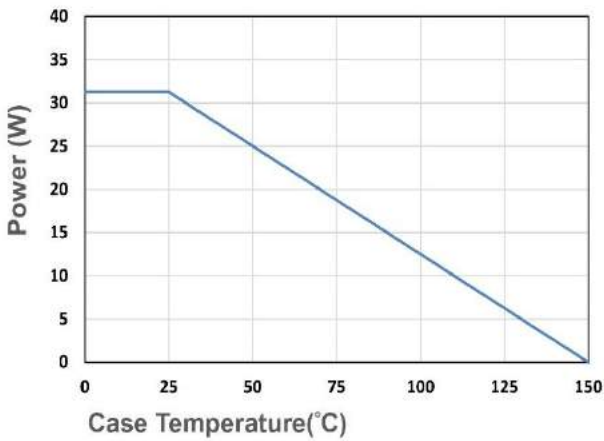


Figure 3. Power Dissipation

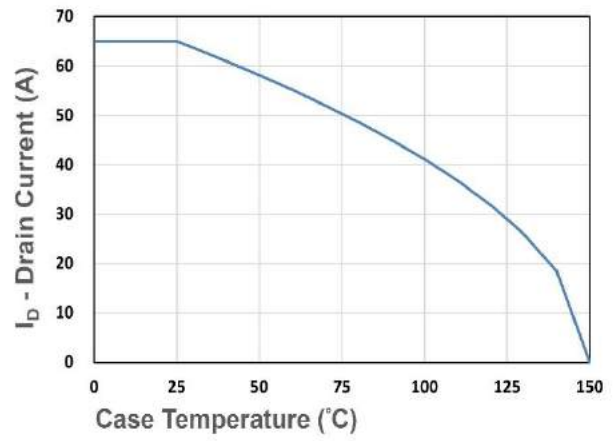


Figure 4. Drain Current

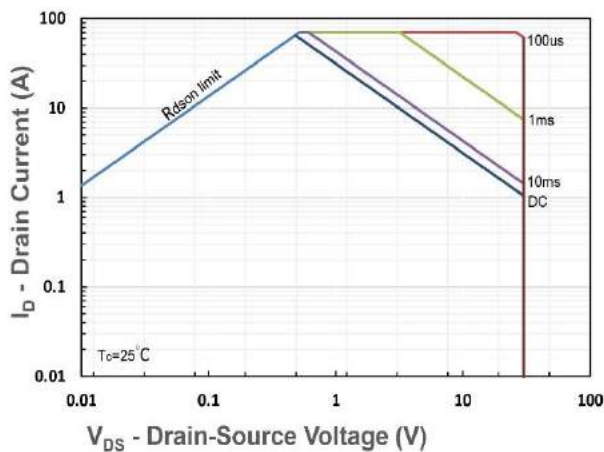


Figure 5. Safe Operating Area

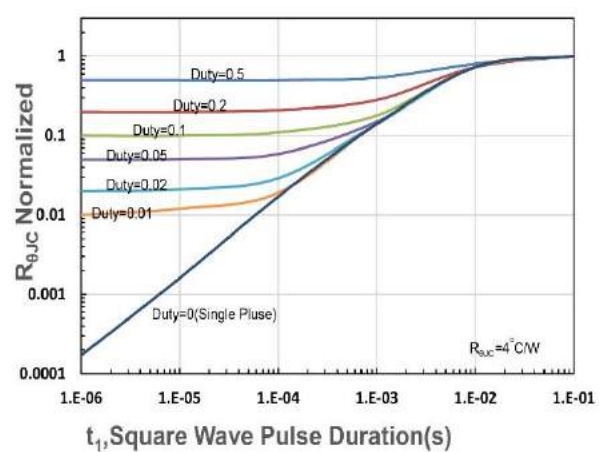
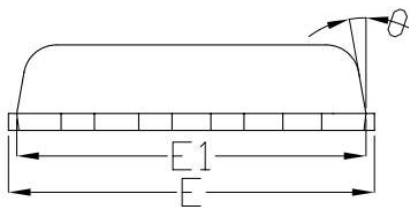
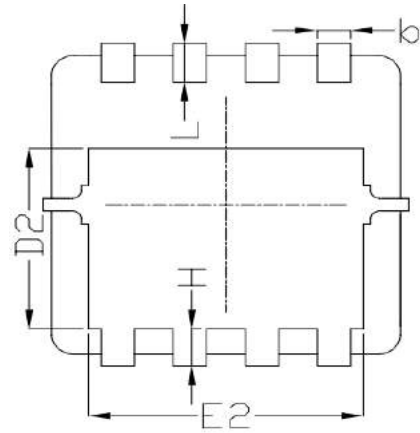
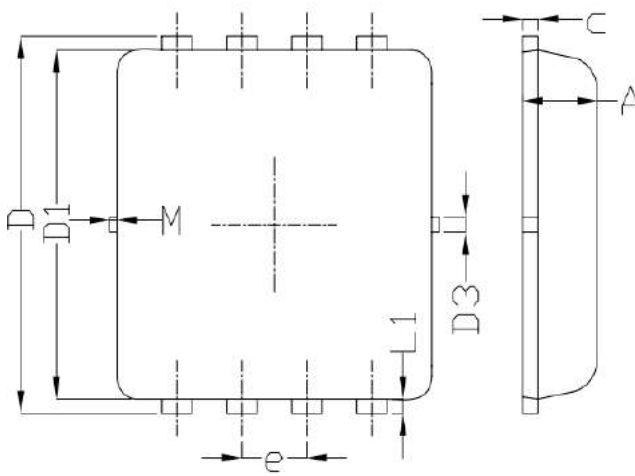
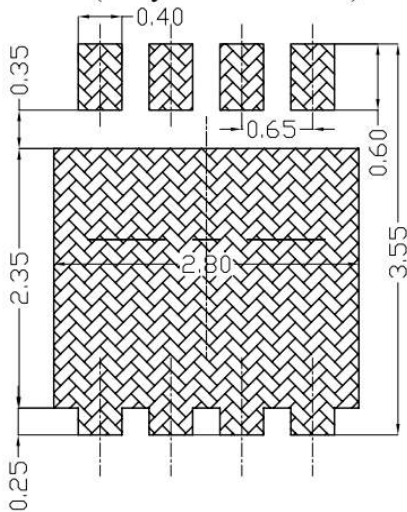


Figure 6. $R_{\theta JC}$ Transient Thermal Impedance

■ PDFN3X3-8L Package Mechanical Data



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			

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