

■ PRODUCT CHARACTERISTICS

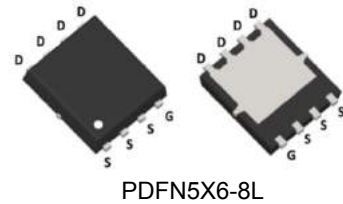
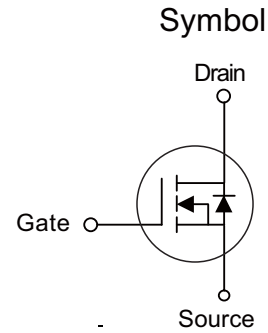
VDSS	30V
$R_{DS(on)typ}(V_{GS}=10V)$	3.6mΩ
$R_{DS(on)typ}(V_{GS}=4.5V)$	5.3mΩ
ID	85A

■ 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	MOT3145G	PDFN5X6	

■ 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	$V_{GSS}$	$\pm 20$	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

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Rating	Unit
Thermal Resistance-Junction to Case	$R_{\theta JC}$	4	$^{\circ}C/W$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}^{②}$	60	$^{\circ}C/W$

Note ① : Max. current is limited by bonding wire

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^{\circ}C$

**■ 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	$\mu A$
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	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain-Source On-state Resistance	$R_{DS(on)}^{④}$	$V_{GS}=10V, I_{DS}=20A$	-	3.6	4.5	m $\Omega$
		$V_{GS}=4.5V, I_{DS}=18A$	-	5.3	7.2	m $\Omega$
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_{DS}=20A$	-	22	-	S
Dynamic characteristics <sup>⑤</sup>						
Gate Resistance	$R_G$	$V_{GS}=0V, V_{DS}=0V, \text{Freq.}=1\text{MHz}$	-	2.2	-	$\Omega$
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	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=15V,$ $I_D=1A, R_{GEN}=6\Omega$	-	9.6	-	nS
Turn-on Rise Time	$t_r$		-	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

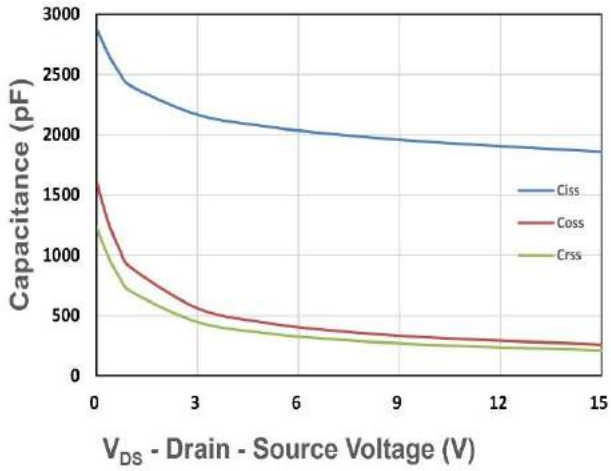


Figure 1. Capacitance

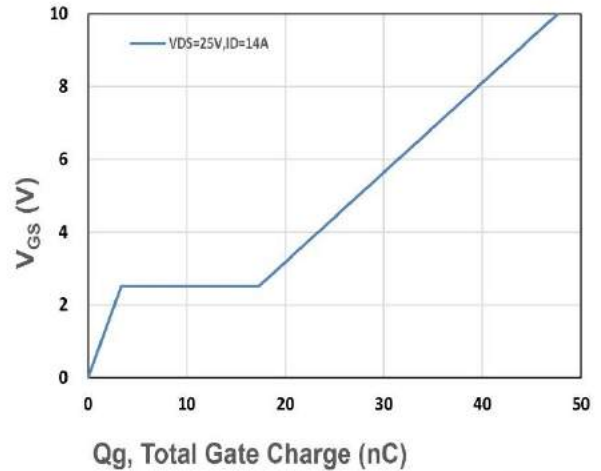


Figure 2. Gate Charge Characteristics

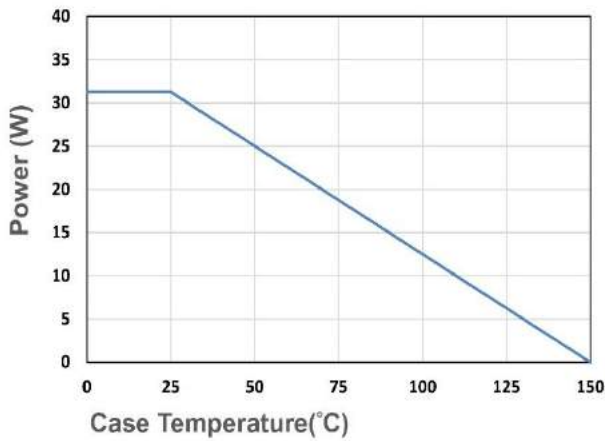


Figure 3. Power Dissipation

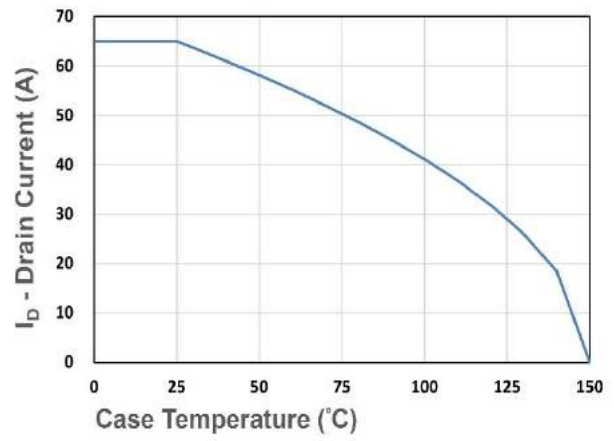


Figure 4. Drain Current

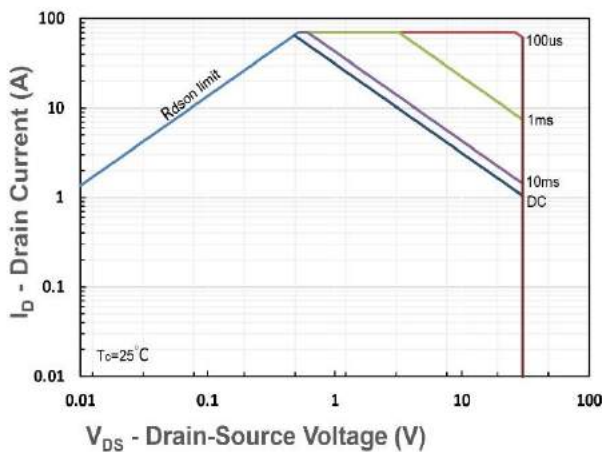


Figure 5. Safe Operating Area

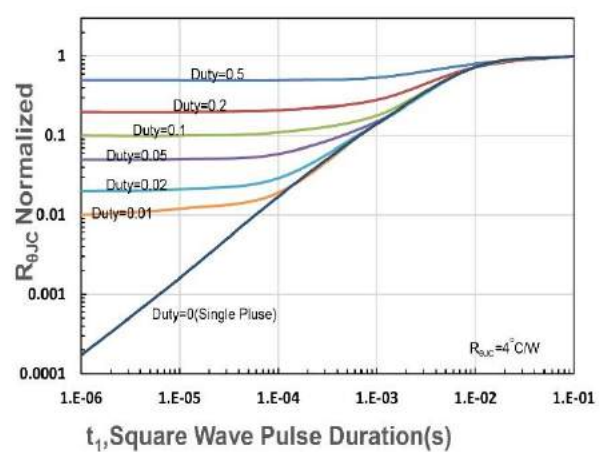
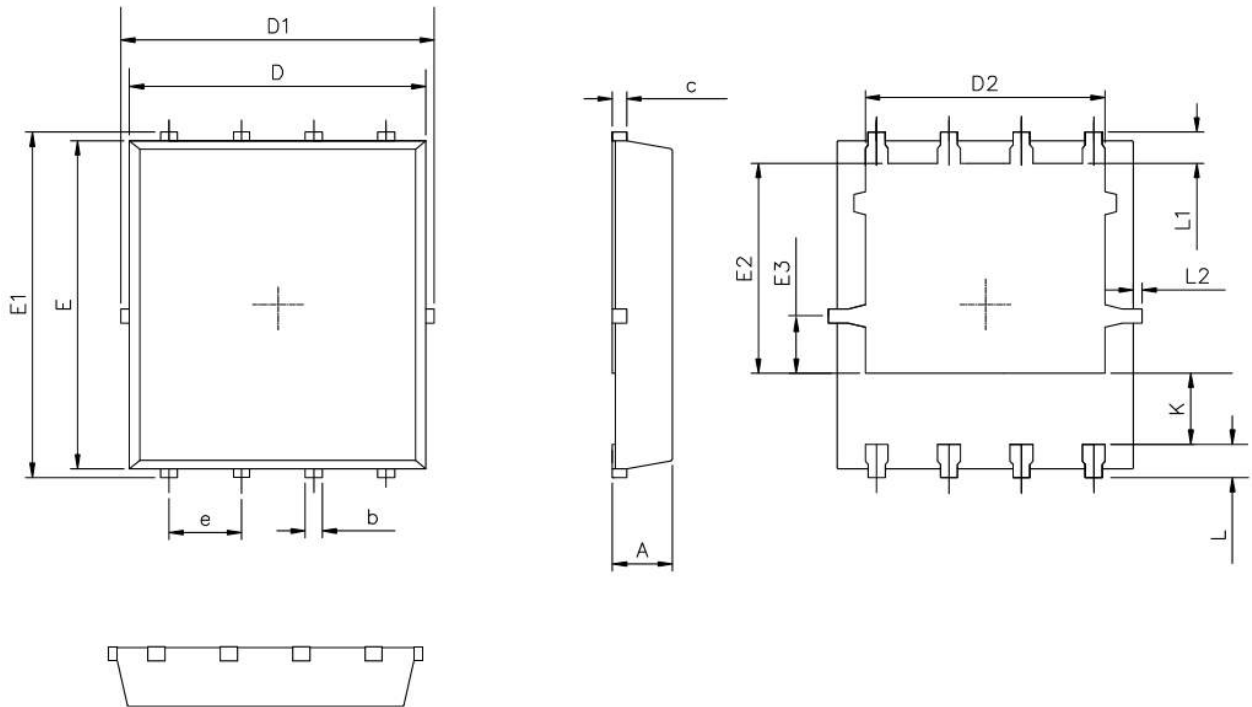
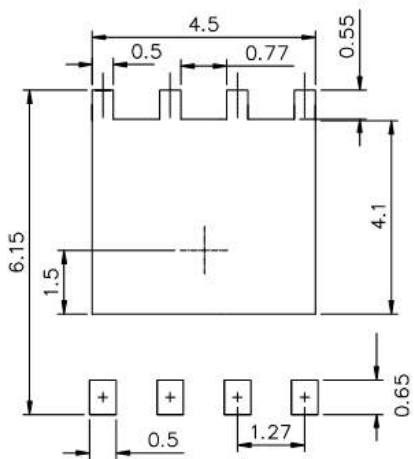


Figure 6.  $R_{\theta JC}$  Transient Thermal Impedance

■ PDFN5X6-8L Package Mechanical Data



RECOMMENDED LAND PATTERN



UNIT:mm

	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.35	0.50
c	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
e		1.27	
L	0.40	0.55	0.70
L1		0.65	
L2	0.00		0.15
K	1.00	1.30	1.50