

■ PRODUCT CHARACTERISTICS

VDSS	-100V
$R_{DS(on)typ}(@V_{GS}=-4.5V)$	95mΩ
$R_{DS(on)typ}(@V_{GS}=-10V)$	85mΩ
ID	-18A

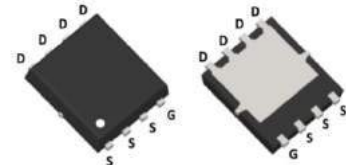
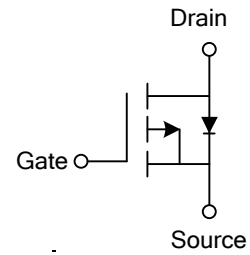
■ APPLICATIONS

- DC/DC Converter

■ FEATURES

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

Symbol



PDFN5X6-8L

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT1793G	PDFN5X6	5000 pieces /Reel

■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}C$ , unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous (Silicon Limited)	$I_D$	-18	A
Drain Current-Continuous( $T_C=100^{\circ}C$ )	$I_D(100^{\circ}C)$	-12	A
Pulsed Drain Current (Package Limited)	$I_{DM}$	-72	A
Maximum Power Dissipation	$P_D$	70	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.79	$^{\circ}C/W$
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
<b>Off characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-100V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.7	-3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-16A$	-	85	93	m $\Omega$
		$V_{GS}=-10V, I_D=-16A$	-	95	105	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-50V, I_D=-10A$	5	-	-	S
<b>Dynamic characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V,$ $F=1.0MHz$	-	3810	-	PF
Output Capacitance	$C_{oss}$		-	99	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	94	-	PF
<b>Switching characteristics</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-50V, I_D=-16A$ $V_{GS}=-10V, R_{GEN}=9.1\Omega$	-	16	-	nS
Turn-on Rise Time	$t_r$		-	73	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	nS
Turn-Off Fall Time	$t_f$		-	57	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=-80V, I_D=-16A,$ $V_{GS}=-10V$	-	61	-	nC
Gate-Source Charge	$Q_{gs}$		-	14	-	nC
Gate-Drain Charge	$Q_{gd}$		-	29	-	nC
<b>Drain-source diode characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-10A$	-	-	-1.2	V
Diode Forward Current	$I_S$		-	-	-18	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^\circ\text{C}, I_F = -16A$ $di/dt = 100A/\mu s$	-	88.3	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	65.9	-	nC
Forward Turn-On Time	$t_{on}$	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

■ TYPICAL CHARACTERISTICS

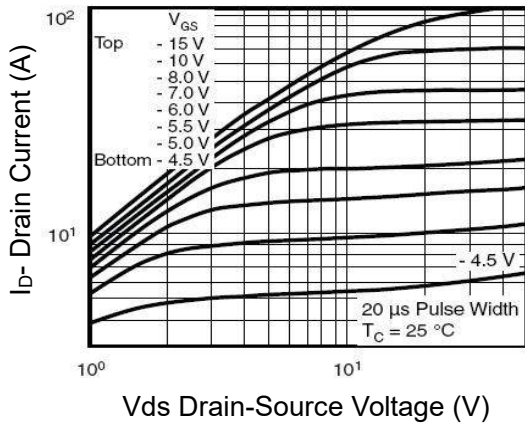


Figure 1 Output characteristics

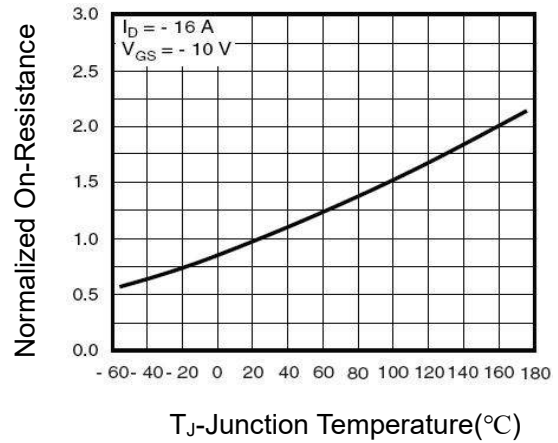


Figure 2  $R_{DS(on)}$ -junction temperature

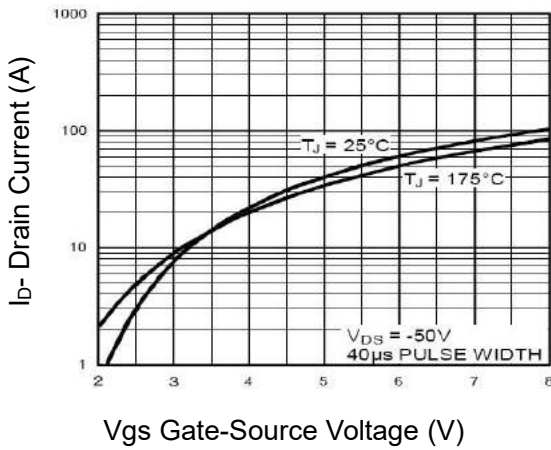


Figure 3 Transfert characteristics

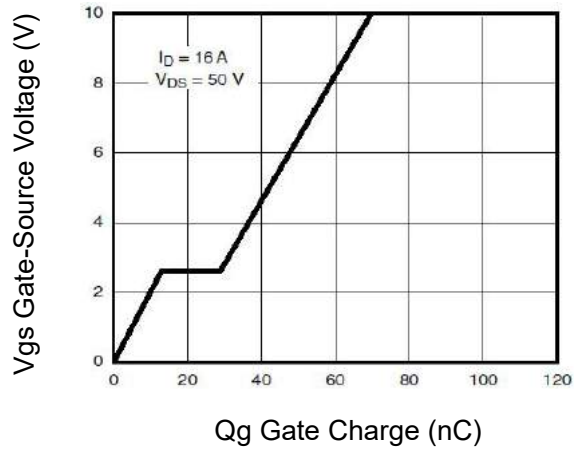


Figure 4 Gate charge

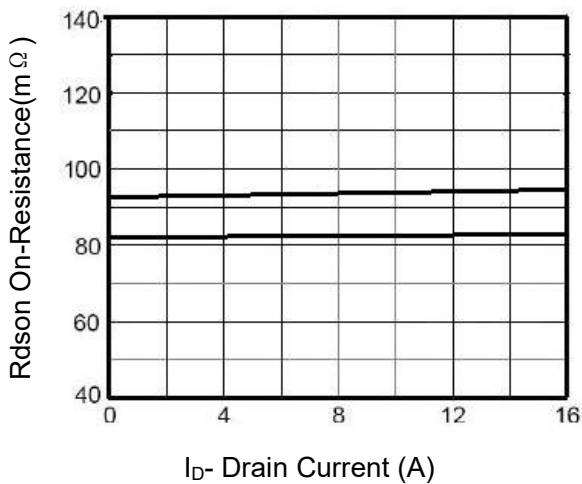


Figure 5  $R_{DS(on)}$ -drain current

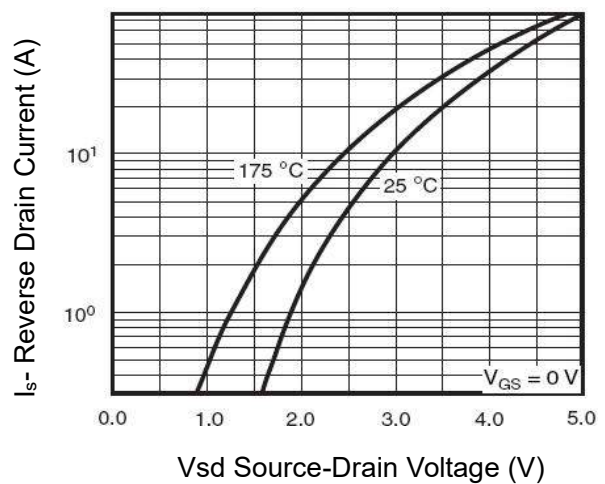


Figure 6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

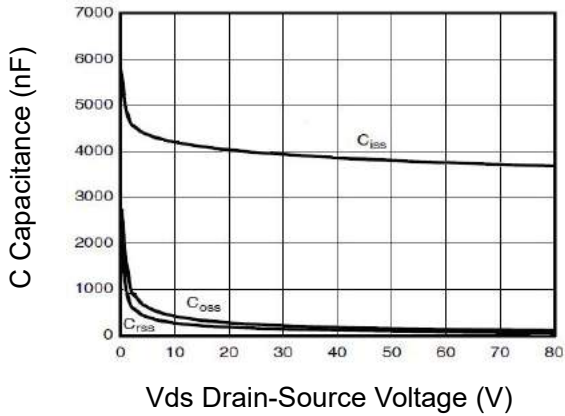


Figure 7 Capacitance vs vds

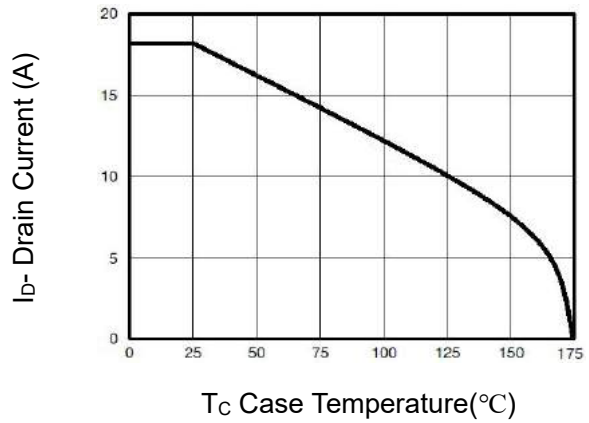


Figure 8 Drain current vs case temperature

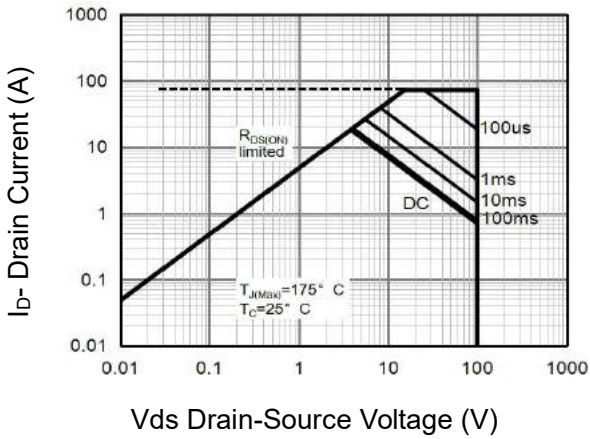


Figure 9 Safe operation area

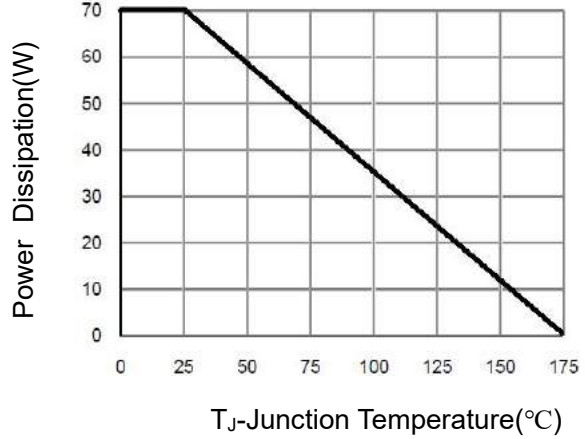


Figure 10 Power de-rating

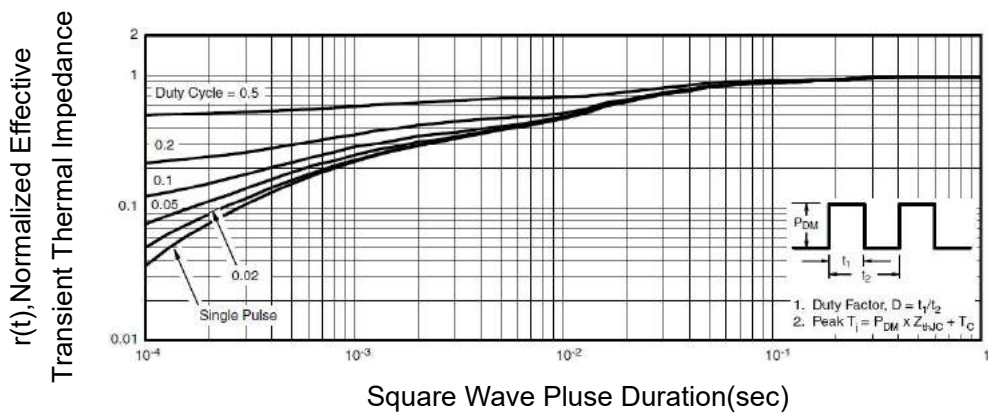
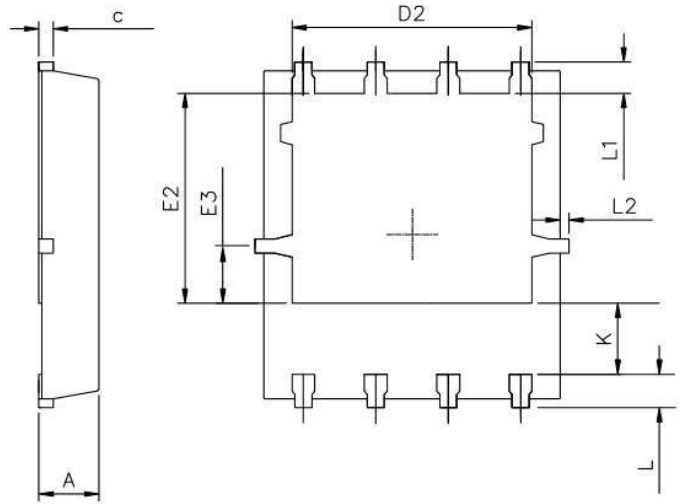
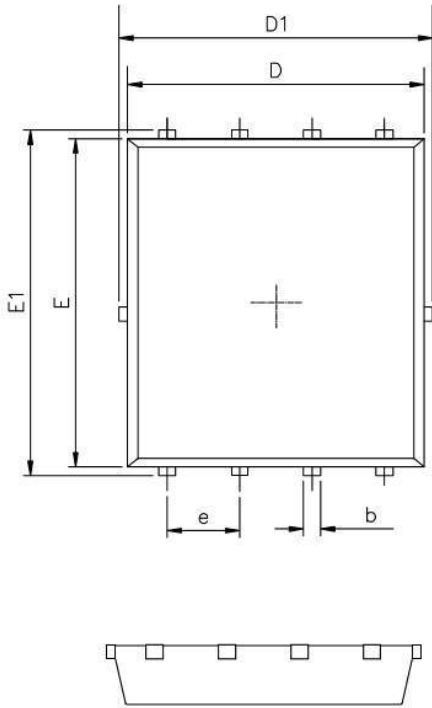
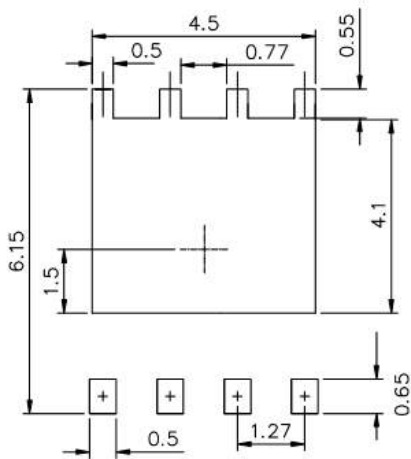


Figure 11 Normalized maximum transient thermal impedance

■ 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

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