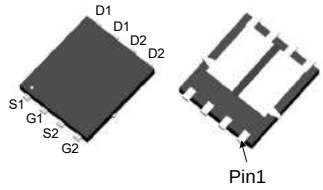
■PRODUCT CHARACTERISTICS

V_{DSS}	500V
$R_{DS(on)}$ Typ@V_{GS}=10V	1.9Ω
I_D	5A

Symbol

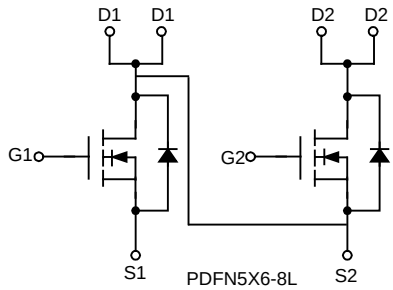


■ APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- LED power supply

■FEATURES

- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability,high ruggedness



■ORDER INFORMATION

Order codes		Package	
Halogen-free	Halogen		
N/A	MOT50221G	PDFN5X6-8L	5000pieces/Reel

■ABSOLUTE MAXIMUM RATINGS (Tc=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	500	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	Continuous	I_D	5	A
	Pulsed (Note 2)	I_{DM}	13	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	151	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.5	V/ns
Power Dissipation		P_D	50	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55~+150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functio nal device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature .
3. L = 10mH, I_{AS}= 5.5A, V_{DD}= 50V, R_G= 25 Ω Starting T_J = 25°C
4. I_{SD}≤ 5.0A, di/dt ≤ 100A/μs, V_{DD}≤BV_{DSS} Starting T_J= 25°C

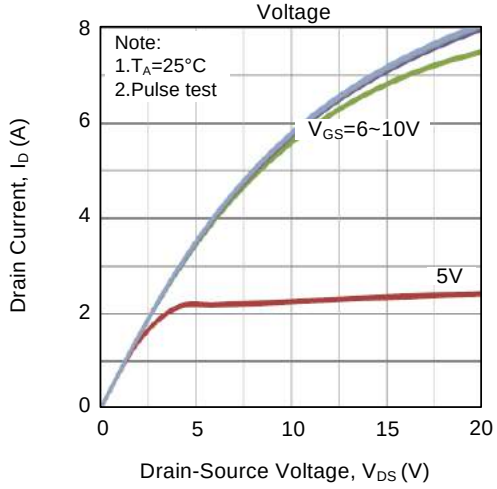
■ ELECTRICAL CHARACTERISTICS(T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	500	-	-	V
Breakdown Voltage Temperature Coefficient		$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=250μA	-	0.5	-	V/°C
Drain-Source Leakage Current		I_{DSS}	V_{DS}=500V, V_{GS}=0V	-	-	1	μA
			V_{DS}=400V, T_C=125°C	-	-	10	
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=30V, V_{DS}=0V	-	-	100	nA
	Reverse		V_{GS}=-30V, V_{DS}=0V	-	-	-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	-	4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=2.5A	-	1.9	2.1	Ω
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz	-	625	-	pF
Output Capacitance		C_{OSS}		-	80	-	pF
Reverse Transfer Capacitance		C_{RSS}		-	15	-	pF
SWITCHING CHARACTERISTICS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DS}=400V, I_D=5A (Note 1, 2)	-	18	-	nC
Gate to Source Charge		Q_{GS}		-	2.2	-	nC
Gate to Drain Charge		Q_{GD}		-	9.7	-	nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=250V, I_D=5A, R_G=25Ω (Note 1, 2)	-	12	-	ns
Rise Time		t_R		-	46	-	ns
Turn-OFF Delay Time		$t_{D(OFF)}$		-	50	-	ns
Fall-Time		t_F		-	48	-	ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S		-	-	5	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}		-	-	20	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=5A, V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time		t_{rr}	I_S=5A, V_{GS}=0V, dI_F/dt=100A/μs (Note 1)	-	195	-	ns
Reverse Recovery Charge		Q_{RR}		-	0.25	-	uC

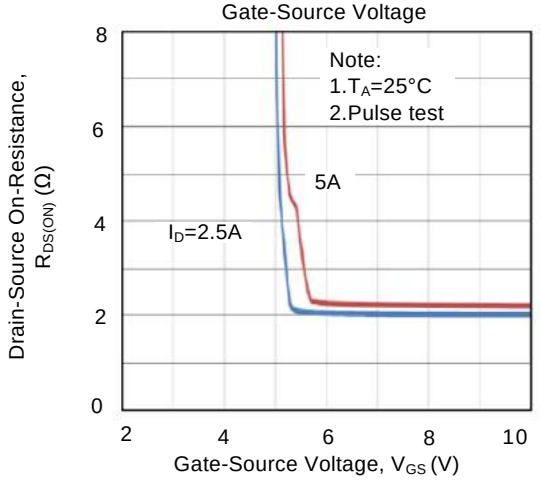
Note: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS

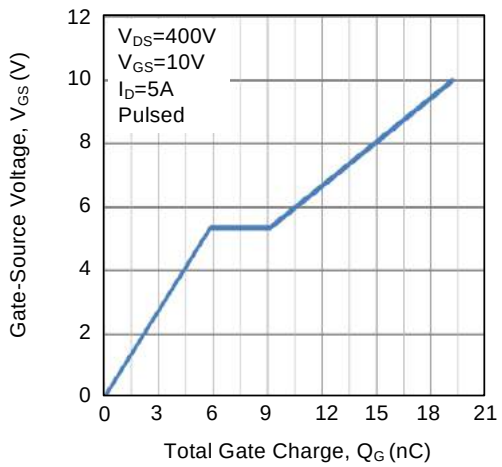
Drain Current vs. Drain-Source Voltage



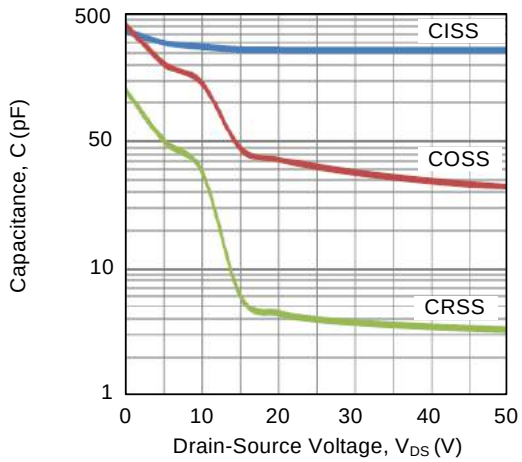
Drain-Source On-Resistance vs. Gate-Source Voltage



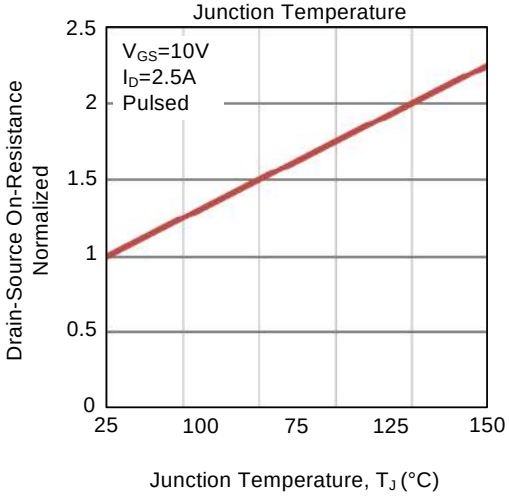
Gate Charge Characteristics



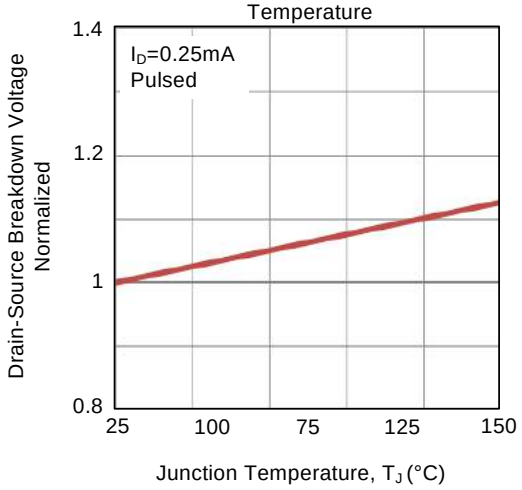
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

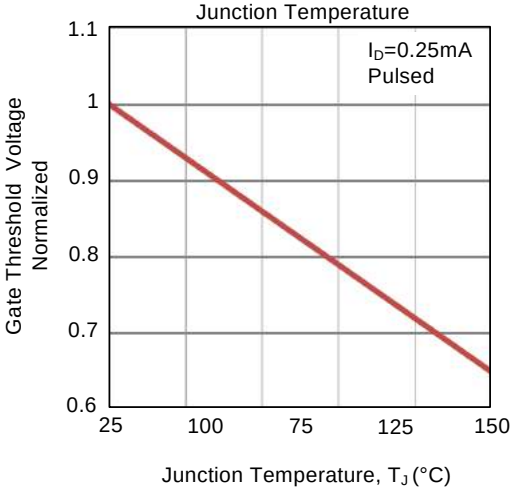


Breakdown Voltage vs. Junction Temperature

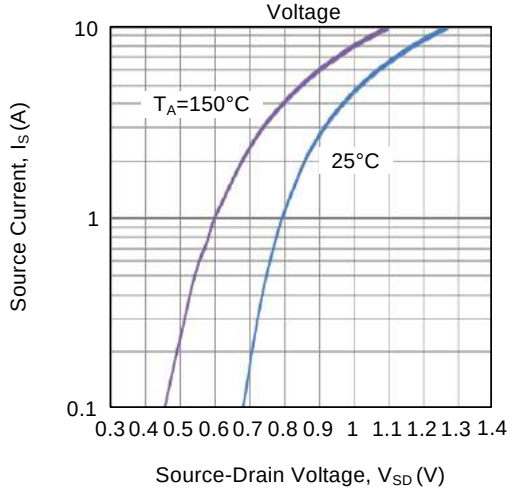


■ TYPICAL CHARACTERISTICS(Cont.)

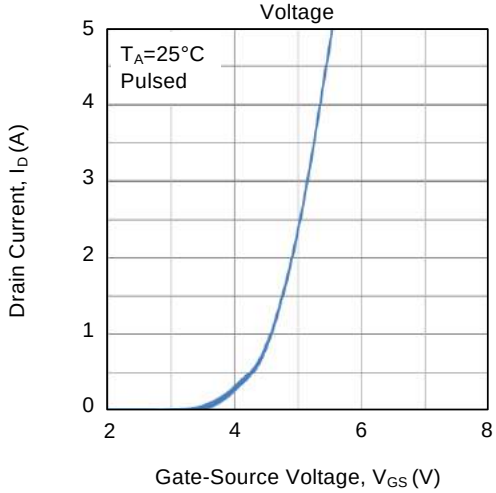
Gate Threshold Voltage vs. Junction Temperature



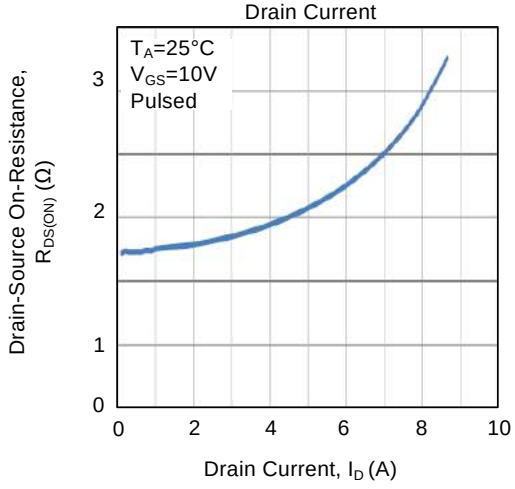
Source Current vs. Source-Drain Voltage



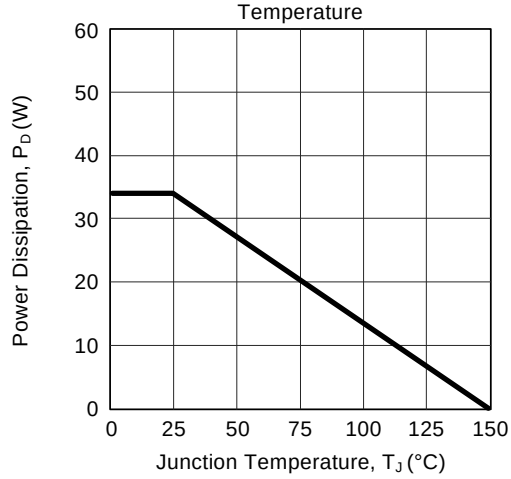
Drain Current vs. Gate-Source Voltage



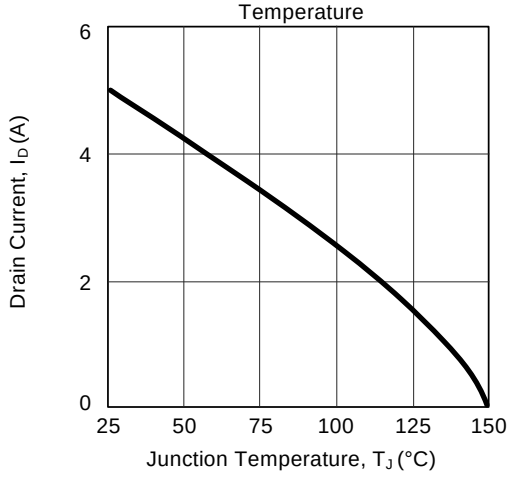
Drain-Source On-Resistance vs. Drain Current



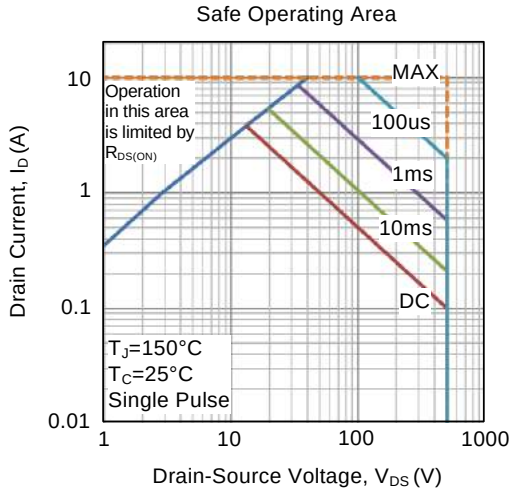
Power Dissipation vs. Junction Temperature



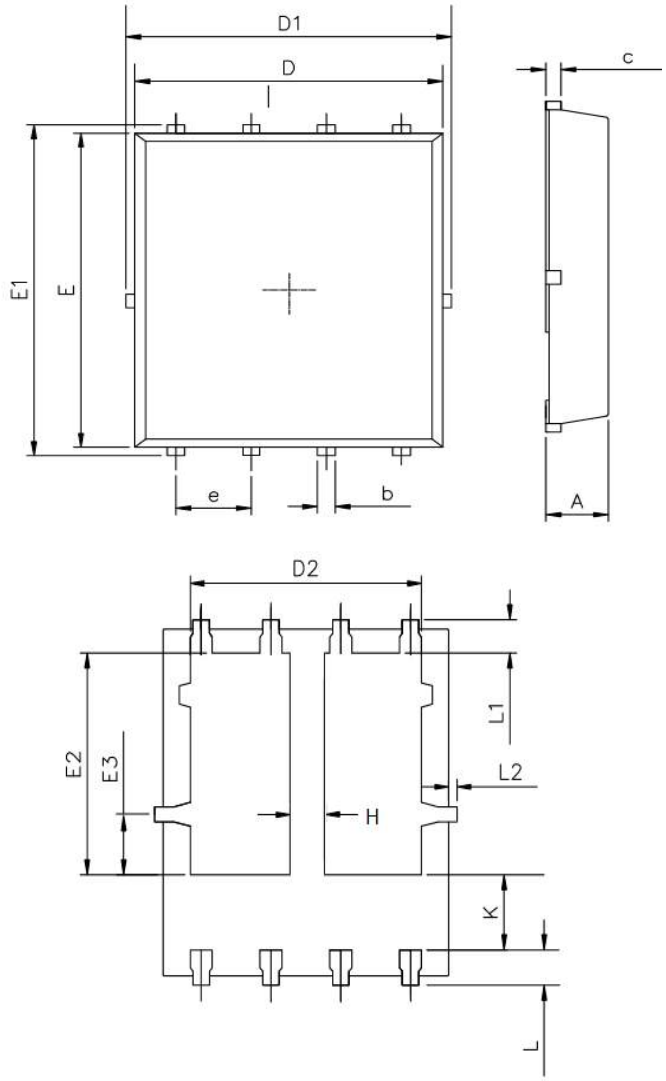
Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS(Cont.)



■ PDFN5X6-8L PACKAGE MECHANICAL DATA



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
H	0.5	0.6	0.7