

■ PRODUCT CHARACTERISTICS

VDSS	30V
$R_{DS(on)Max}(V_{GS} = 10V)$	3.4mΩ
$R_{DS(on)Max}(V_{GS} = 4.5V)$	6.5mΩ
ID	73A

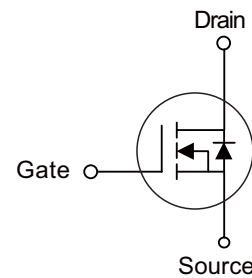
■ APPLICATIONS

- \* Switching applications

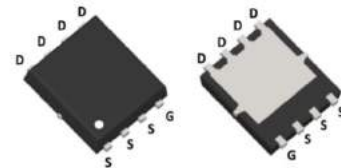
■ FEATURES

- \* Simple drive requirement
- \* Low on-resistance
- \* 100% Rg test
- \* 100% UIS test
- \* Halogen-Free

Symbol



PDFN5060-8L



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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_C = 25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V$	73	A
$I_D @ T_C = 100^\circ\text{C}$	Drain Current, $V_{GS} @ 10V$	46	A
$I_D @ T_A = 25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	29	A
$I_D @ T_A = 70^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	23.5	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	200	A
$P_D @ T_C = 25^\circ\text{C}$	Total Power Dissipation	31.2	W
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation <sup>3</sup>	5	W
$E_{AS}$	Single Pulse Avalanche Energy <sup>4</sup>	64.8	mJ
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

■ THERMAL DATA

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	4	$^\circ\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	25	$^\circ\text{C}/\text{W}$

■ Electrical Characteristics ( $T_c=25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=19A$	-	-	3.4	$m\Omega$
		$V_{GS}=4.5V, I_D=12A$	-	-	6.5	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	-	2.3	V
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=19A$	-	65	-	S
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V$	-	-	10	$\mu A$
$I_{GSS}$	Gate-Source Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
$Q_g$	Total Gate Charge <sup>5</sup>	$I_D=19A$	-	38	60.8	nC
$Q_{gs}$	Gate-Source Charge <sup>5</sup>	$V_{DS}=15V$	-	6	-	nC
$Q_{gd}$	Gate-Drain ("Miller") Charge <sup>5</sup>	$V_{GS}=10V$	-	10	-	nC
$t_{d(on)}$	Turn-on Delay Time <sup>5</sup>	$V_{DS}=15V$	-	9.5	-	ns
$t_r$	Rise Time <sup>5</sup>	$I_D=19A$	-	57	-	ns
$t_{d(off)}$	Turn-off Delay Time <sup>5</sup>	$R_G=6\Omega$	-	39	-	ns
$t_f$	Fall Time <sup>5</sup>	$V_{GS}=10V$	-	82	-	ns
$C_{iss}$	Input Capacitance <sup>5</sup>	$V_{GS}=0V$	-	1610	2576	pF
$C_{oss}$	Output Capacitance <sup>5</sup>	$V_{DS}=25V$	-	245	-	pF
$C_{rss}$	Reverse Transfer Capacitance <sup>5</sup>	$f=1.0\text{MHz}$	-	200	-	pF
$R_g$	Gate Resistance	$f=1.0\text{MHz}$	-	1.8	3.6	$\Omega$
Source-drain diode						
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$I_S$	Source Current ( Body Diode )		-	-	73	A
$V_{SD}$	Forward On Voltage <sup>2</sup>	$I_S=19A, V_{GS}=0V$	-	-	1.2	V
$t_{rr}$	Reverse Recovery Time <sup>5</sup>	$I_S=19A, V_{GS}=0V,$	-	12	-	ns
$Q_{rr}$	Reverse Recovery Charge <sup>5</sup>	$di/dt=100A/\mu s$	-	4	-	nC

**Notes:**

1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board,  $t \leq 10\text{sec}$ ;  $60^\circ\text{C/W}$  at steady state.
4. Starting  $T_j=25^\circ\text{C}$ ,  $V_{DD}=30V$ ,  $L=0.1\text{mH}$ ,  $R_G=25\Omega$ ,  $V_{GS}=10V$

■ TYPICAL CHARACTERISTICS

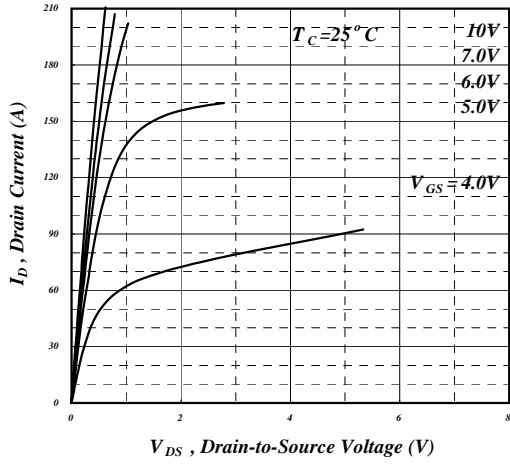


Fig 1. Typical Output Characteristics

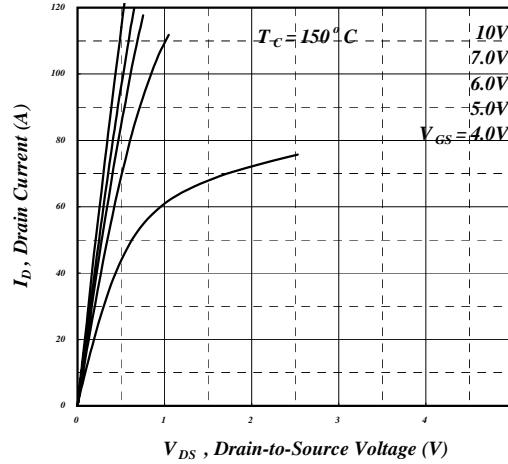


Fig 2. Typical Output Characteristics

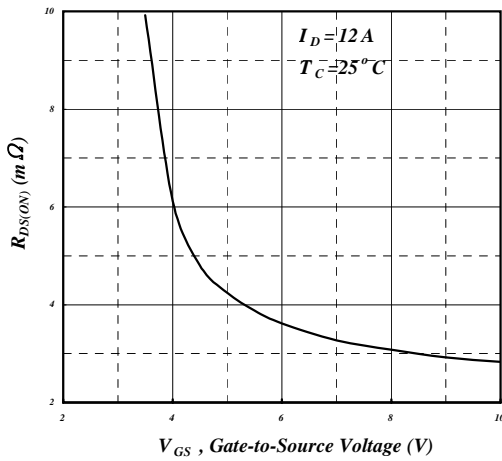


Fig 3. On-Resistance v.s. Gate Voltage

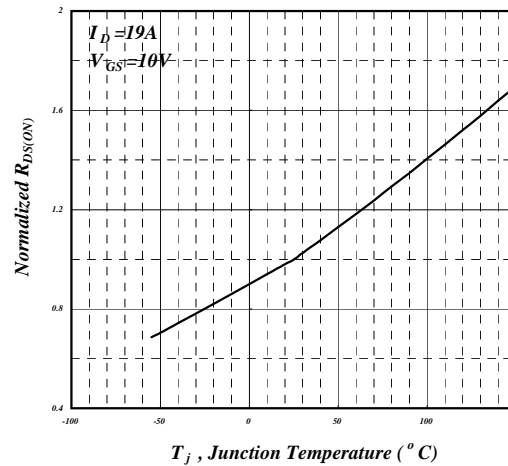


Fig 4. Normalized On-Resistance v.s. Junction Temperature

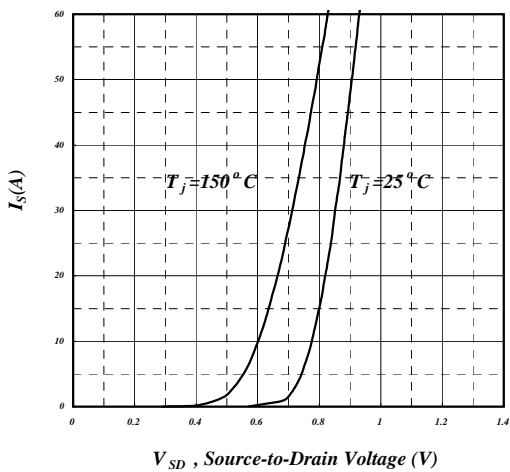


Fig 5. Forward Characteristic of Reverse Diode

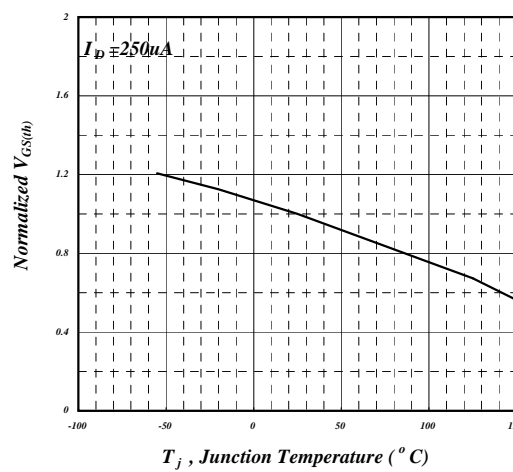


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

■ TYPICAL CHARACTERISTICS(Cont.)

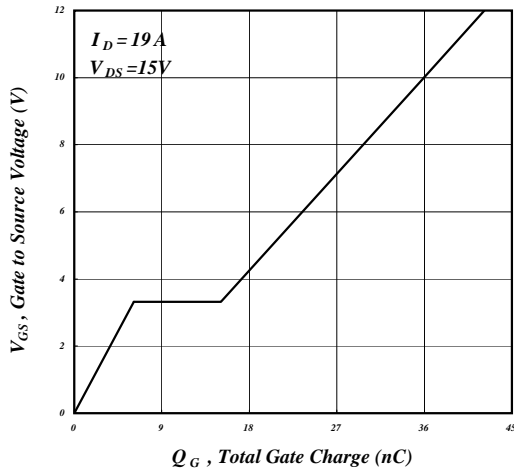


Fig 7. Gate Charge Characteristics

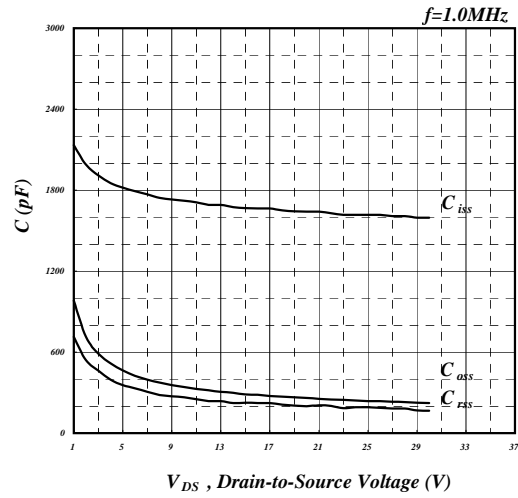


Fig 8. Typical Capacitance Characteristics

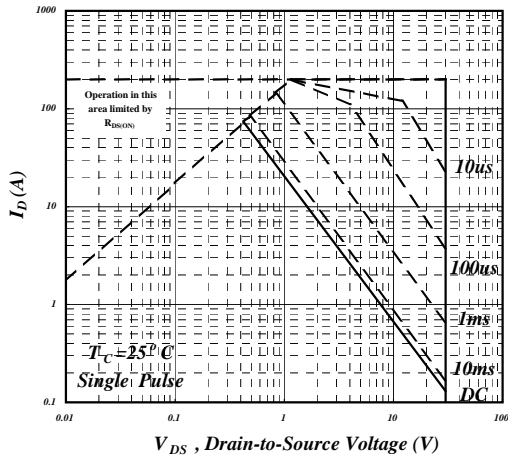


Fig 9. Maximum Safe Operating Area

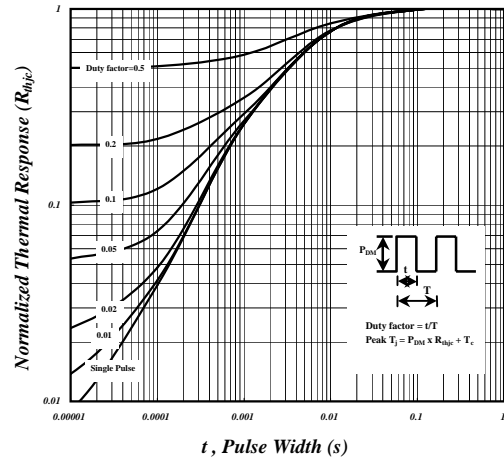


Fig 10. Effective Transient Thermal Impedance

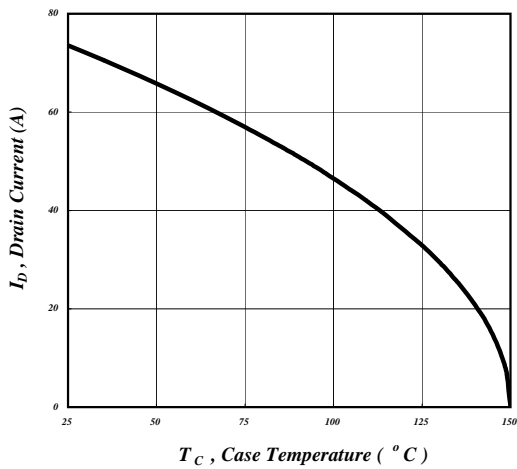


Fig 11. Drain Current v.s. Case Temperature

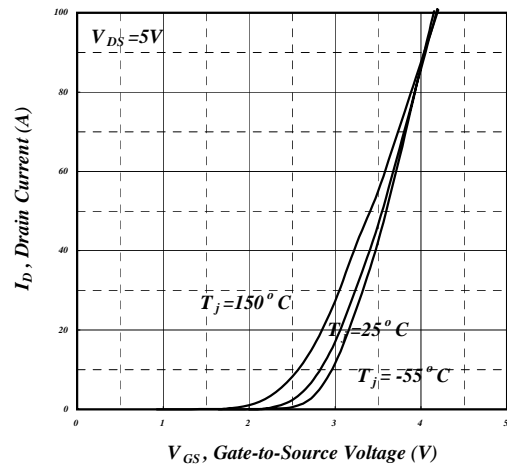


Fig 12. Transfer Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

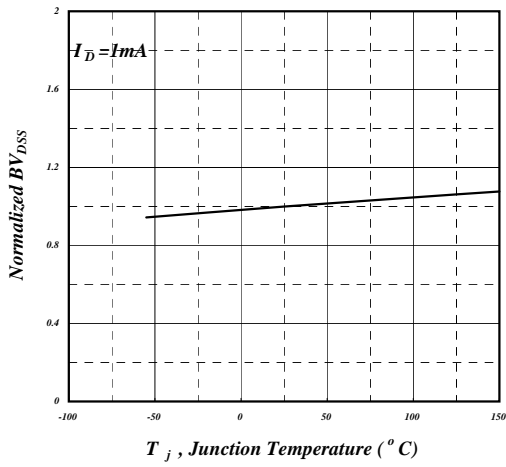


Fig 13. Normalized  $BV_{DSS}$  v.s. Junction Temperature

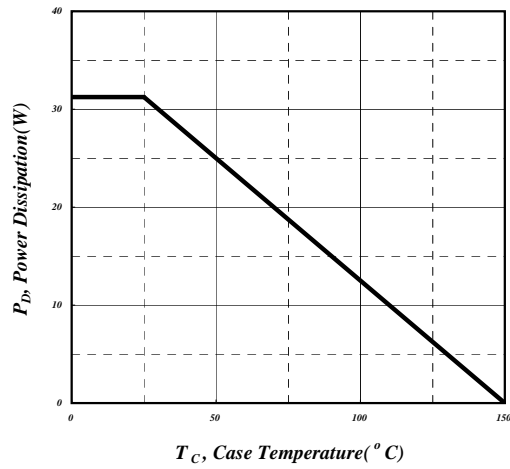


Fig 14. Total Power Dissipation

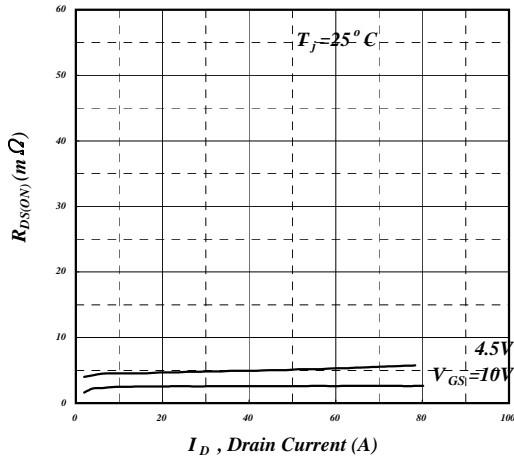
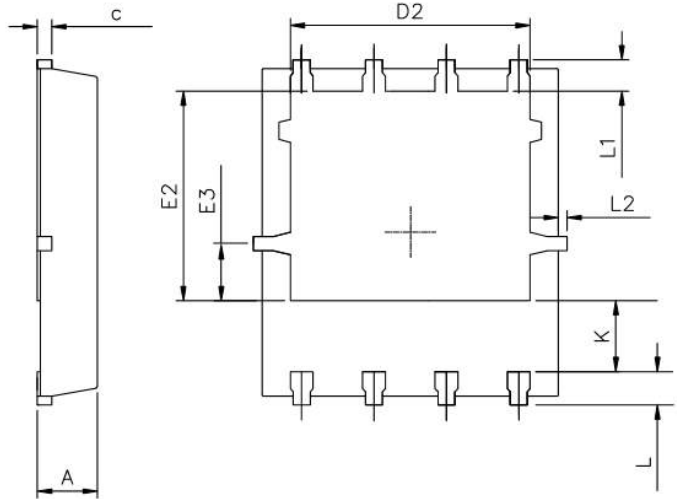
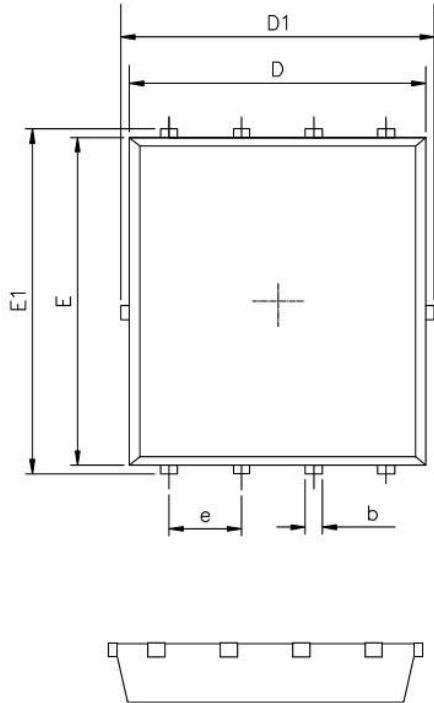
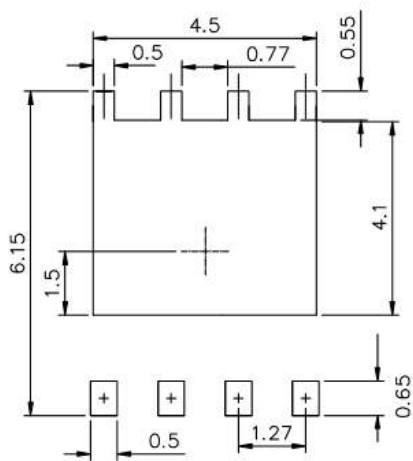


Fig 15. Typ. Drain-Source on State Resistance

■ PDFN5060-8L 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