

60V/130A N-Channel MOSFET

Features

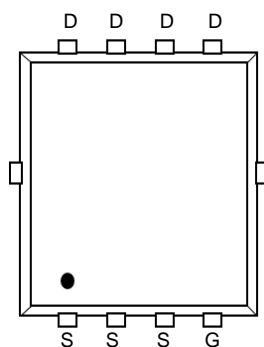
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- Advanced SGT technology

Application

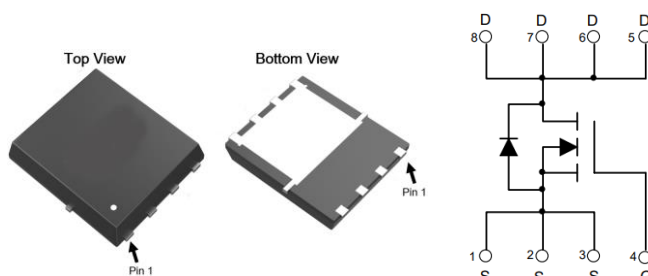
- Power switching application

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
60V	2.6m Ω @10V	130A
	3.5m Ω @4.5V	



Marking and pin assignment



PDFN5X6-8L top view

Schematic diagram



Pb-Free



RoHS



Halogen-Free

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
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Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 155	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 130	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 480	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 130	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 175	W
R_{thJC}	Thermal resistance, junction - case	$T_C=25^\circ\text{C}$ 0.85	$^\circ\text{C}/\text{W}$
E_{AS}	Single pulse avalanche energy ^{Note 1}	400	mJ

Electrical Characteristics (T_J=25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.8	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =30A	--	2.0	2.6	mΩ
		V _{GS} =4.5V, I _D =20A	--	2.6	3.5	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	6540	--	pF
C _{OSS}	Output Capacitance		--	900	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	65	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =30V, I _D =20A, V _{GS} =10V	--	100	--	nC
Q _{gs}	Gate Source Charge		--	16.3	--	nC
Q _{gd}	Gate Drain Charge		--	14.5	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =30V, I _D =30A, V _{GS} =10V, R _G =4.7Ω	--	16	--	nS
t _r	Turn-on Rise Time		--	9	--	nS
t _{d(off)}	Turn-Off Delay Time		--	60	--	nS
t _f	Turn-Off Fall Time		--	12	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =30A,	--	0.8	1.2	V

Note: 1. V_{DD}=30V, L=0.5mH, R_G=25Ω, I_{AS}=40A Starting T_J=25° C.

Typical Operating Characteristics

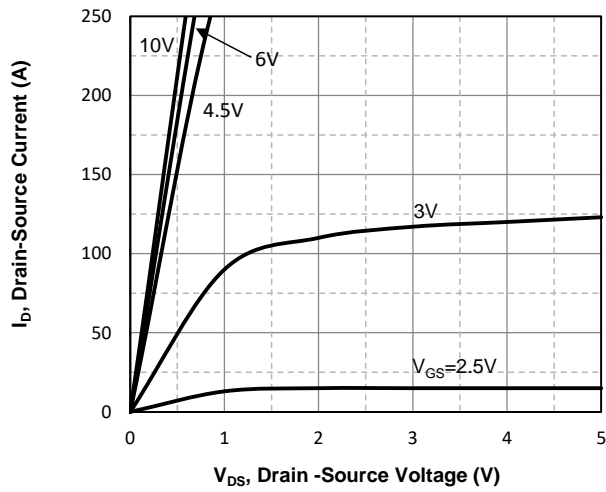


Fig1. Typical Output Characteristics

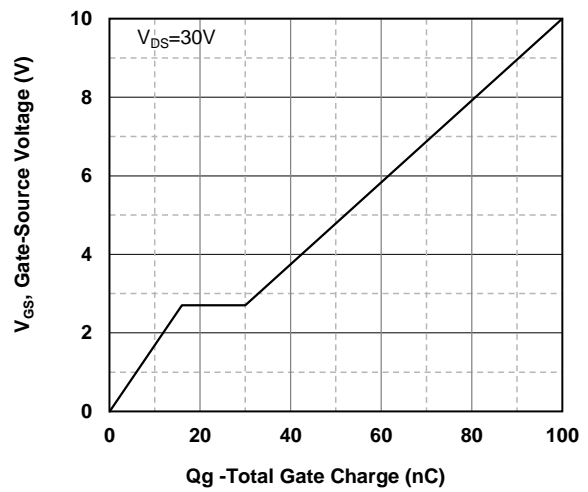


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

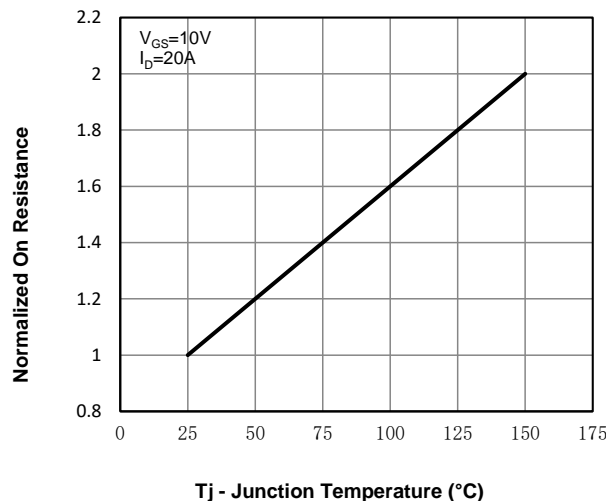


Fig3. Normalized On-Resistance Vs. Temperature

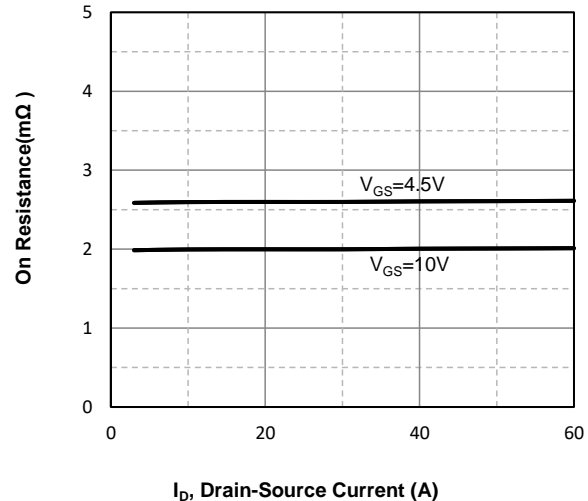


Fig4. On-Resistance Vs. Drain-Source Current

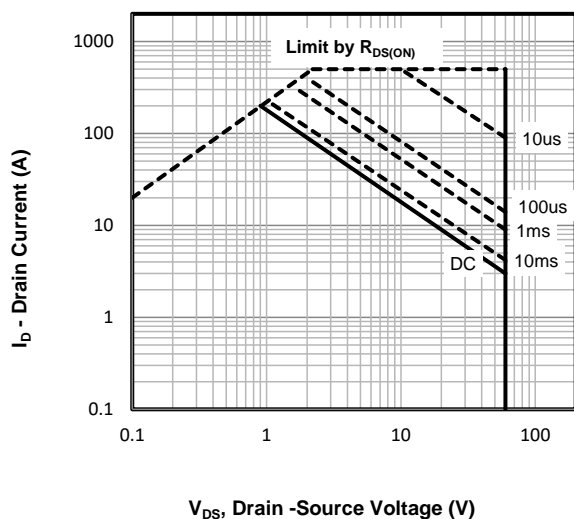


Fig5. Maximum Safe Operating Area

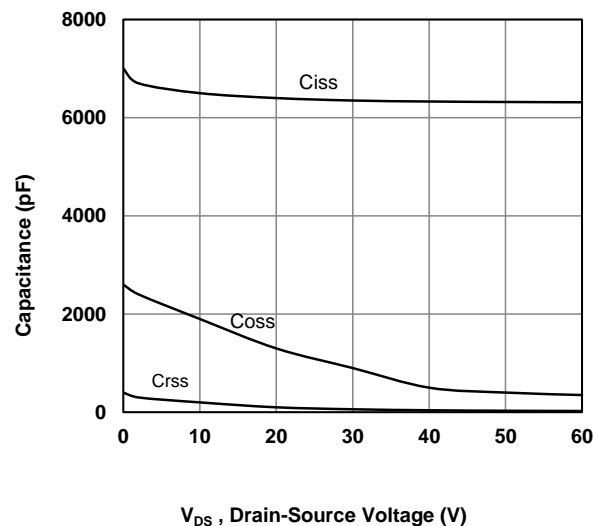
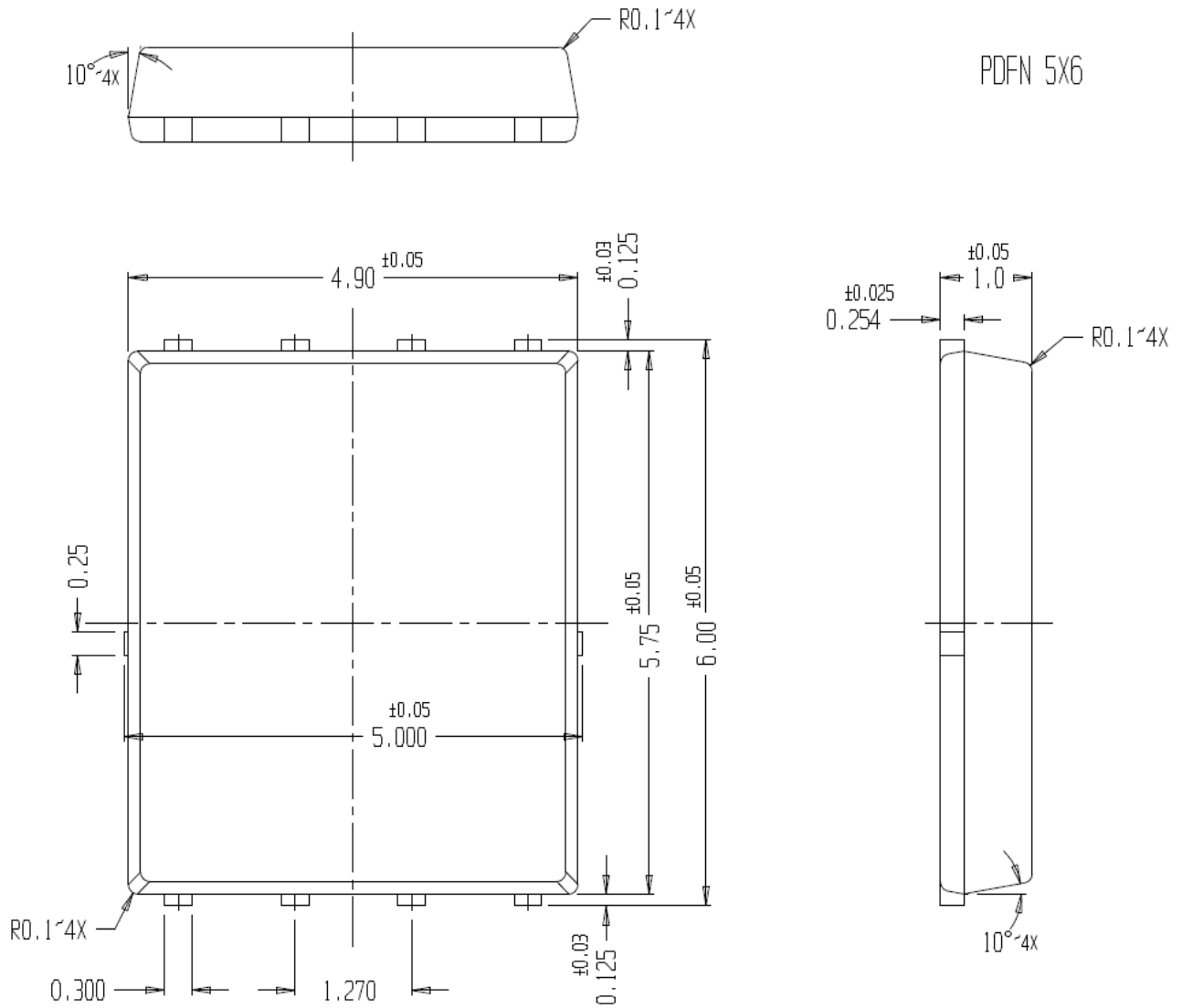


Fig6. Typical Capacitance Vs. Drain-Source

PDFN5X6-8L Package information



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