SI7430DP-TP
N-Channel Enhancement MOSFET

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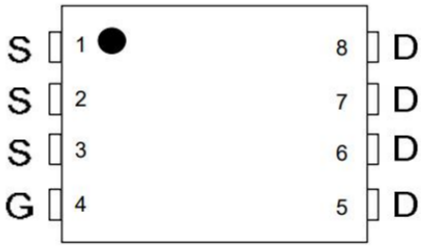
Product Summary

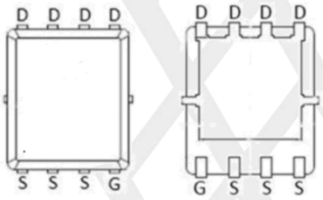
● V_{DS}		150 V
● I_{DS}	(at V_{GS}=10V)	50A
● $R_{DS\ (ON)}$	(at V_{GS}=10V)	≤13mΩ (TYP)

Application

- Load switch
- High Frequency Switching and Synchronous Rectification
- Active Clamp in Intermediate
- DC/DC Power Supplies

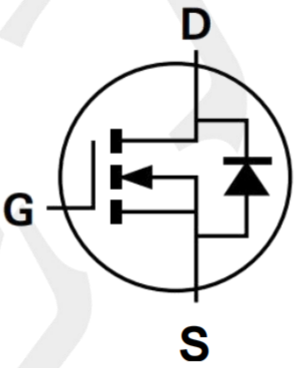
Package and Pin Configuration





PDFN5X6-8

Circuit diagram



Absolute Maximum Ratings

(T_A=25℃unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	50	A
	T_C=100℃		35	
Pulsed Drain Current		I_{DM}	200	A
Single Pulse Avalanche Energy		EAS	306	mJ
Total Power Dissipation	T_C=25℃	P_{DTOT}	120	W
Operating Junction Temperature Range		T_J	-55 to +150	℃
Storage Temperature Range		T_{stg}	-55 to +150	℃

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	PCB Mount (Note)	$R_{\theta JA}$	50	°C/W
Thermal Resistance Junction-Case		$R_{\theta JC}$	1.04	°C/W

Note : The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

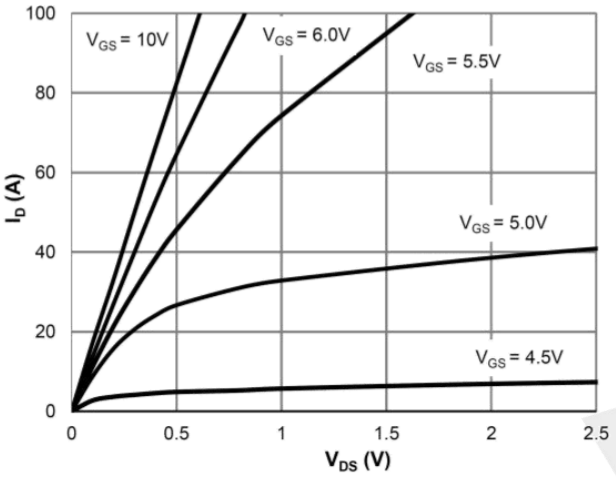
Electrical Characteristics (T$_A$=25℃unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	145	150	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D= 250μA	$V_{GS(th)}$	2.0	--	4.0	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 90V, V_{GS}=0V	I_{DSS}	--	0.1	1.0	μA
	V_{DS}=90V, T_J=55°C		--	1.0	5.0	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= 10V, I_D= 20A	R_{DS}(on)	--	13	16	mΩ
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = 75V, I_D = 20A, V_{GS} = 10V	Q_g	--	30	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	5.8	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	7.0	--	
Input Capacitance	V_{DS} = 75V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	2230	--	pF
Output Capacitance		C_{oss}	--	293	--	
Reverse Transfer Capacitance		C_{rss}	--	22	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DD} =50V, I_D=20A, V_{GS} = 10V, R_G = 6Ω	$t_{d(on)}$	--	13	--	nS
Rise Time (Note 3)		t_r	--	25	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	31	--	
Fall Time (Note 3)		t_f	--	26	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_F = 10A	V_{SD}	--	0.7	1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	50	A
Pulsed Current (Note 1)		I_{SM}	--	--	200	A

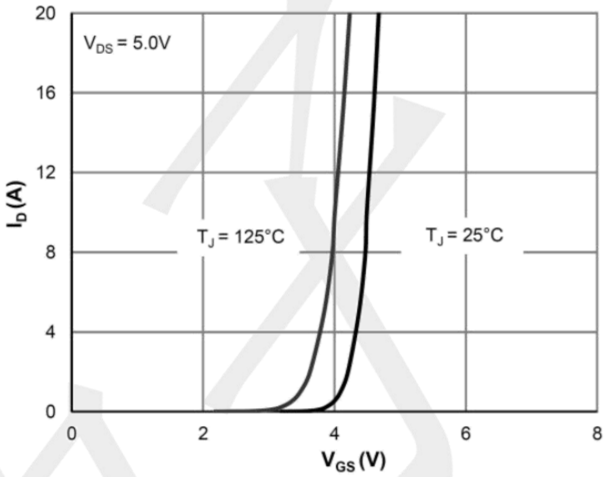
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

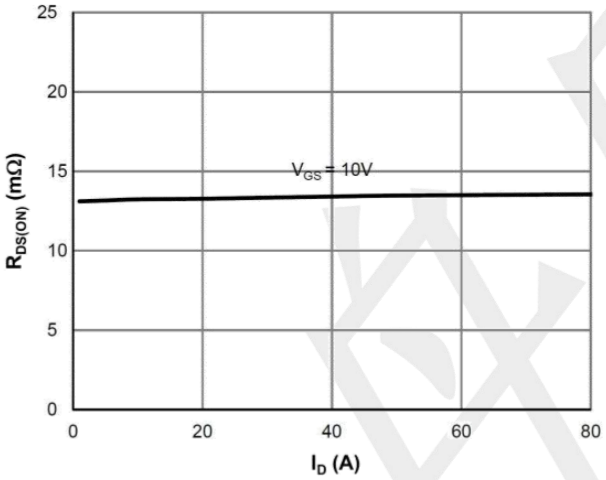
Typical Electrical and Thermal Characteristics



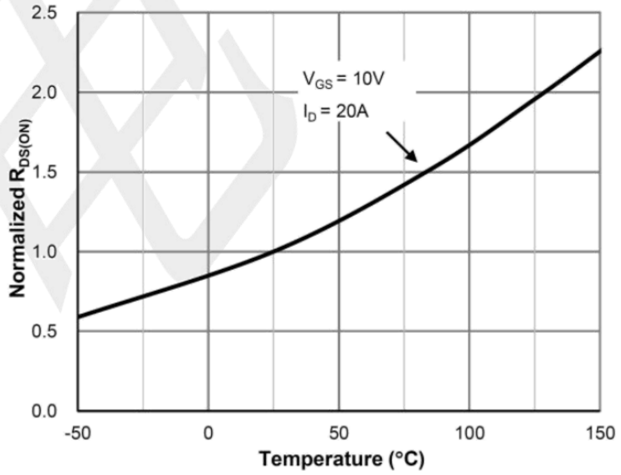
Saturation Characteristics



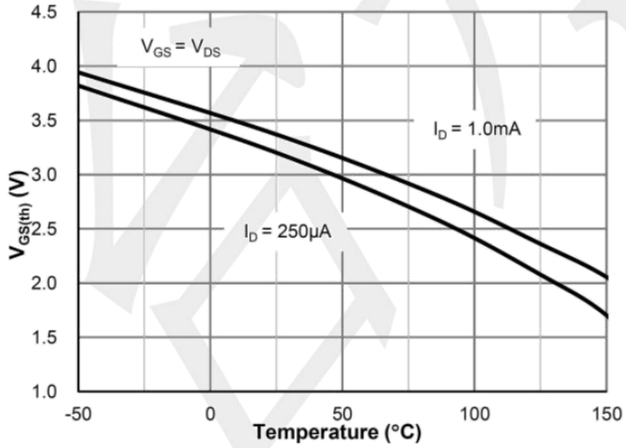
Transfer Characteristics



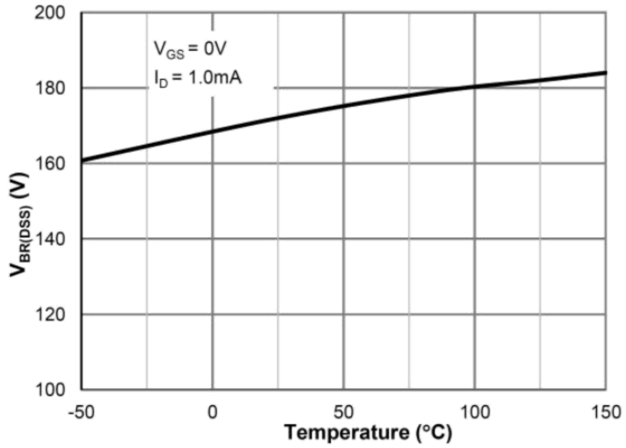
$R_{DS(ON)}$ vs. Drain Current



$R_{DS(ON)}$ vs. Junction Temperature

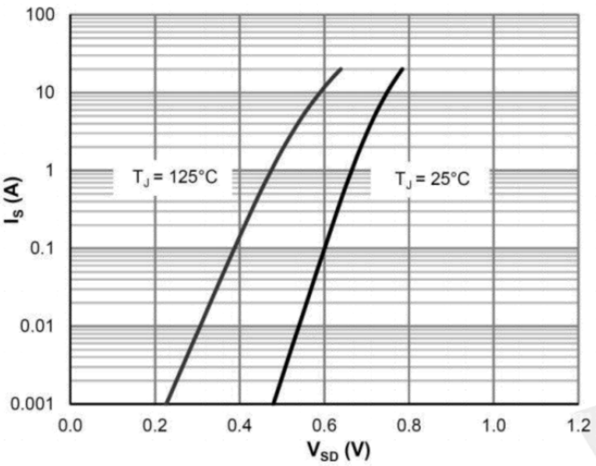


$V_{GS(th)}$ vs. Junction Temperature

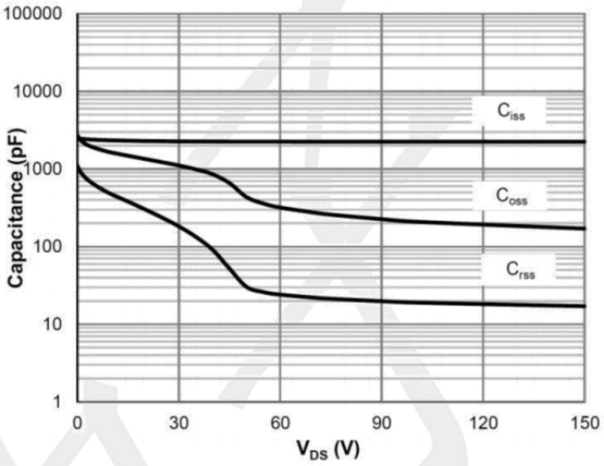


$V_{BR(DSS)}$ vs. Junction Temperature

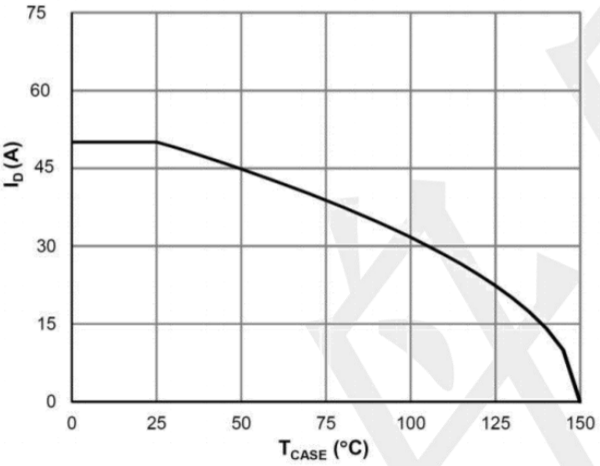
Typical Performance Characteristics



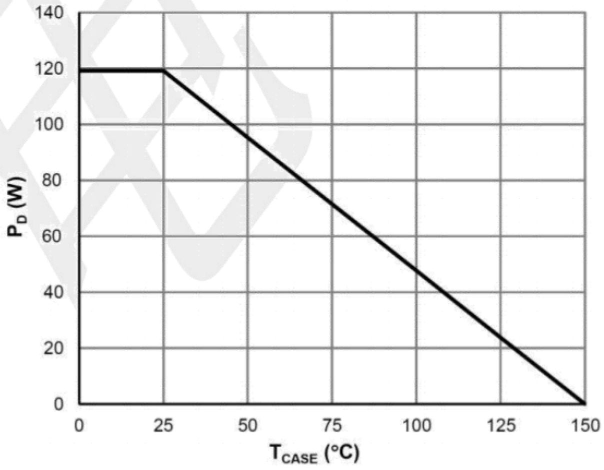
Body-Diode Characteristics



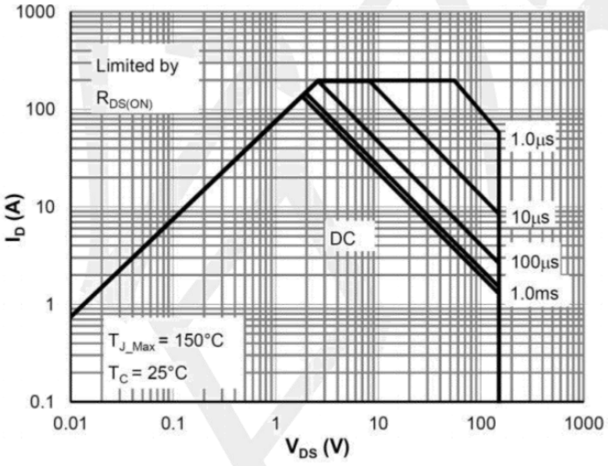
Capacitance Characteristics



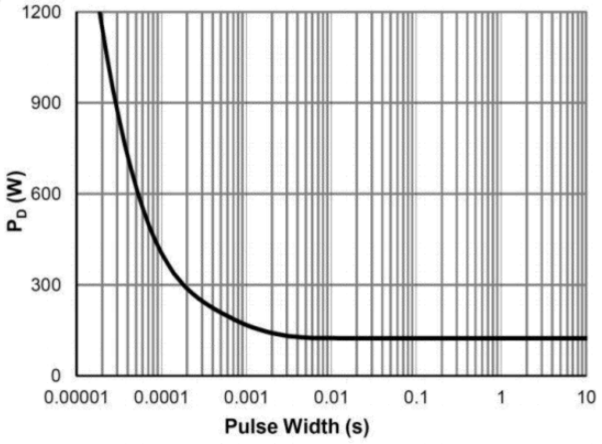
Current De-rating



Power De-rating



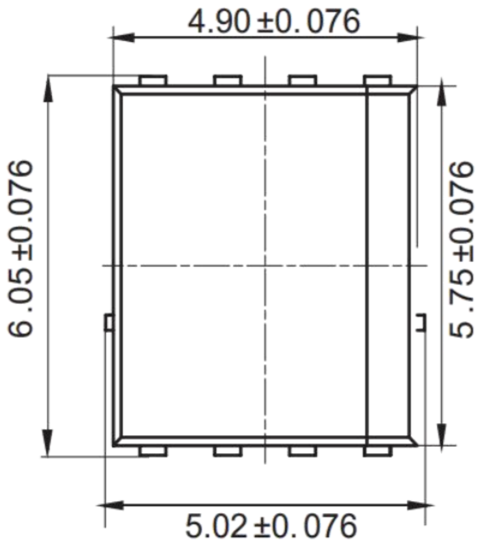
Maximum Safe Operating Area

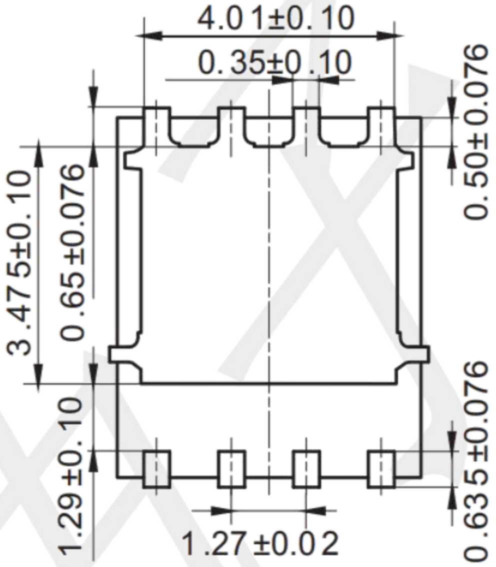


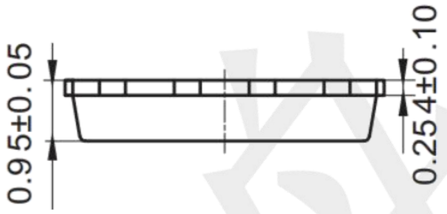
Single Pulse Power Rating, Junction-to-Case

Package Information

PDFN5X6-8







Mounting Pad Layout (unit: mm)