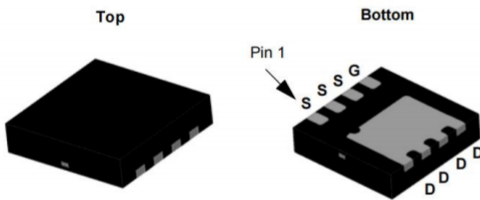


Product Summary

- V_{DS} -150 V
- I_{DS} -3A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <940m Ω

Package and Pin Configuration



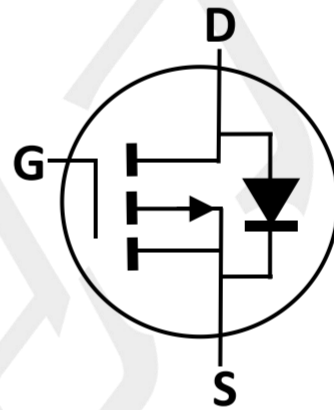
DFN3X3-8

Marking:2523P

Application

- Active Clamp Switch
- Portable equipment and battery Powered systems
- Active Clamp in Intermediate DC/DC Power Supplies

Circuit diagram



Equivalent Circuit

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted) **Thermal Characteristic**

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	-3
		$T_C=100^\circ C$	-1.6
Pulsed Drain Current	I_{DM}	-10	A
Total Power Dissipation	P_{DTOT}	7.7	W
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ C$

Note : When mounted on 1" square PCB (FR4 material).

PARAMETER	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	R_{thJA}	62	$^\circ C/W$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-150	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-2	-3	-4	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-120V, V_{GS}=0V$	I_{DSS}	--	--	-1	μA
	$V_{DS}=-120V, T_J=55^\circ C$		--	--	-10	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}=-10V, I_D=-1A$	$R_{DS(on)}$	--	765	940	m Ω
	$V_{GS}=-10V, T_J=125^\circ C$		--	1500	--	
Forward Transconductance (Note 2)	$V_{DS}=-10V, I_D=-1A$	g_{fs}	--	2	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}=-75V, I_D=-3A,$ $V_{GS}=-10V$	Q_g	--	6.2	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	1.4	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	3.3	--	
Input Capacitance	$V_{DS}=-25V, V_{GS}=0V,$ $F=1.0MHz$	C_{iss}	--	200	--	pF
Output Capacitance		C_{oss}	--	60	--	
Reverse Transfer Capacitance		C_{rss}	--	10	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DD}=-75V, I_D=-3A,$ $V_{GS}=-10V,$ $R_{GEN}=25\Omega$	$t_{d(on)}$	--	15	--	nS
Rise Time (Note 3)		t_r	--	11	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	19	--	
Fall Time (Note 3)		t_f	--	13	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}=0V, I_F=-3A$	V_{SD}	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	-3	A
Pulsed Current (Note 1)		I_{SM}	--	--	-10	A

Notes:

1. Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

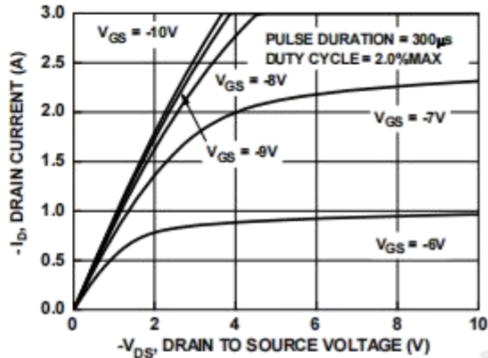


Figure 1. On-Region Characteristics

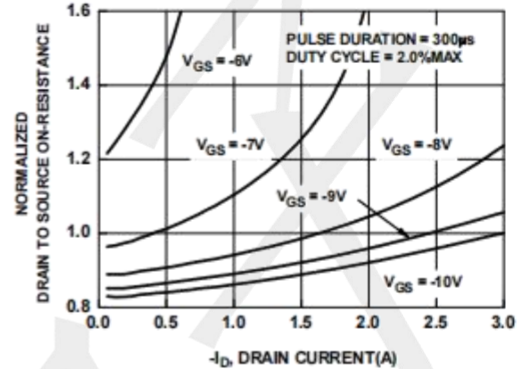


Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

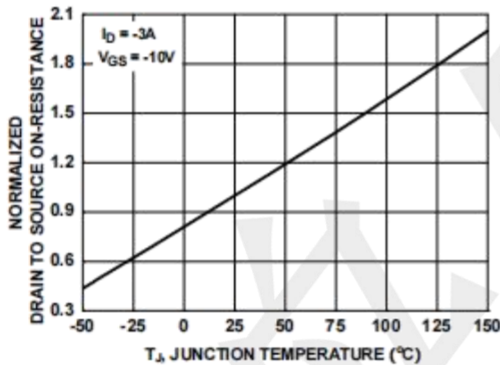


Figure 3. Normalized On-Resistance vs Junction Temperature

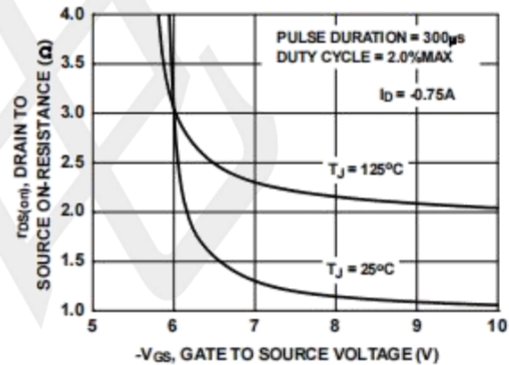


Figure 4. On-Resistance vs Gate to Source Voltage

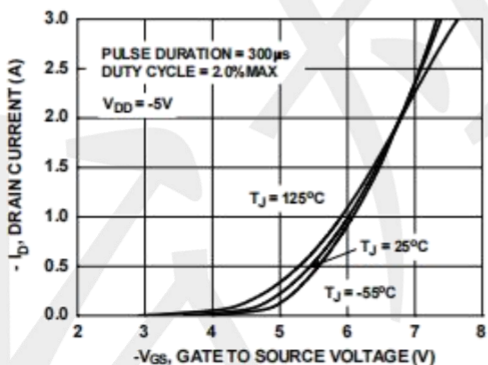


Figure 5. Transfer Characteristics

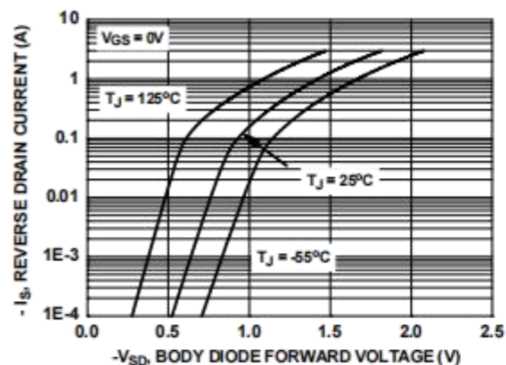


Figure 6. Source to Drain Diode Forward Voltage vs Source Current

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

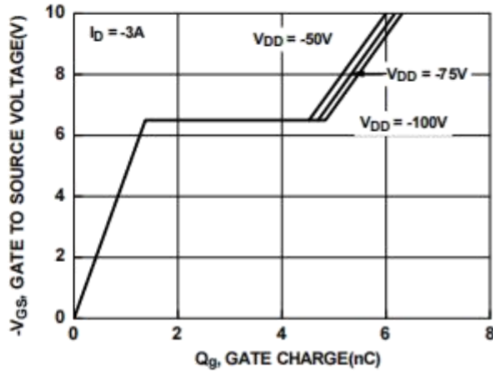


Figure 7. Gate Charge Characteristics

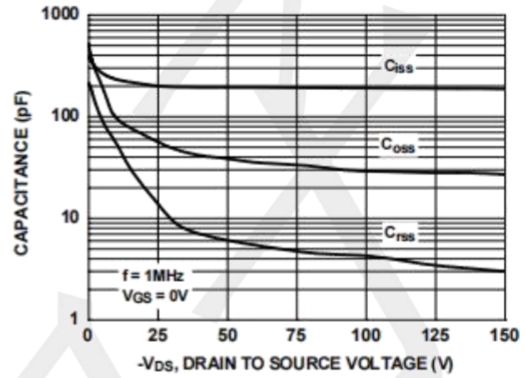


Figure 8. Capacitance vs Drain to Source Voltage

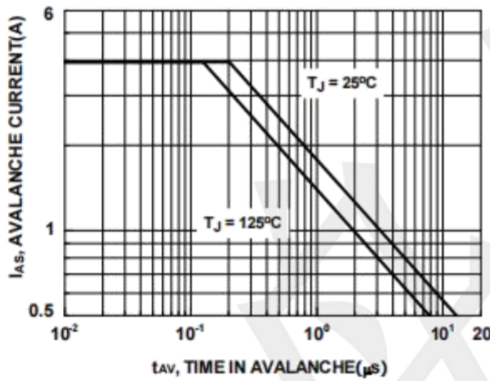


Figure 9. Unclamped Inductive Switching Capability

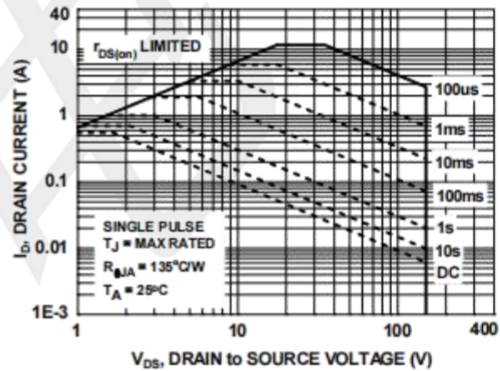


Figure 10. Forward Bias Safe Operating Area

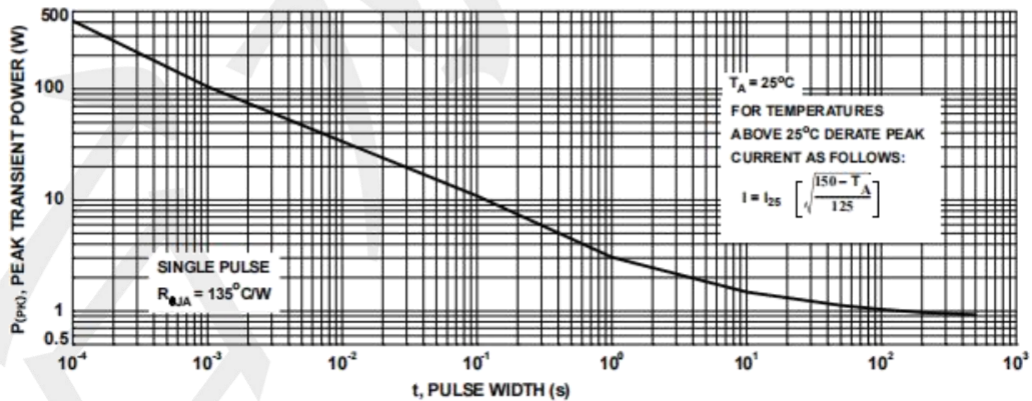
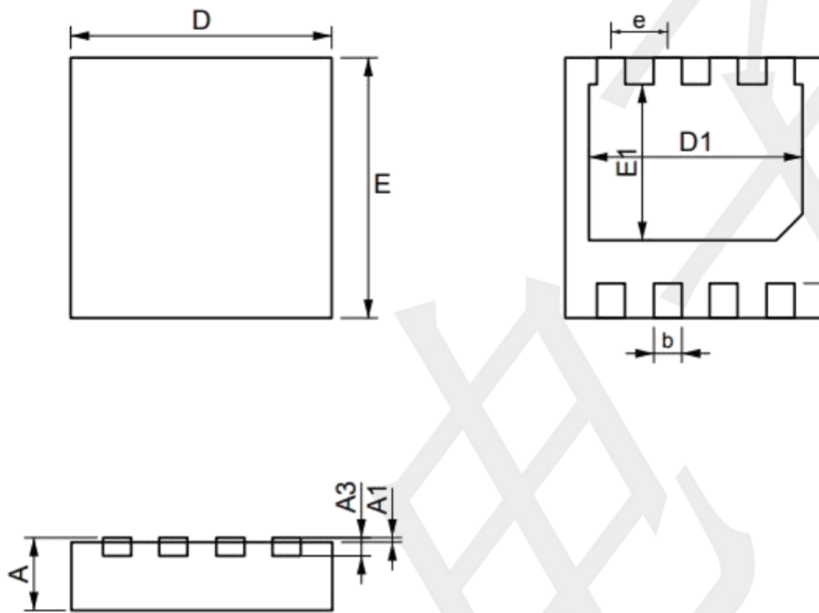


Figure 11. Single Pulse Maximum Power Dissipation

* The power dissipation PD is based on T_{J(max)} = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

DFN3X3-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
D	2.924	3.076	0.115	0.121
E	2.924	3.076	0.115	0.121
D1	2.350	2.550	0.093	0.100
E1	1.700	1.900	0.067	0.075
k	0.200MIN.		0.008MIN.	
b	0.270	0.370	0.011	0.015
e	0.650TYP.		0.026TYP.	
L	0.324	0.476	0.013	0.019

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