TECH PUBLIC
台舟电子

FDMC2523P-TP
P-Channel MOSFET

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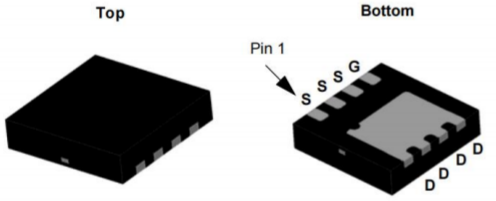
Product Summary

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

Application

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

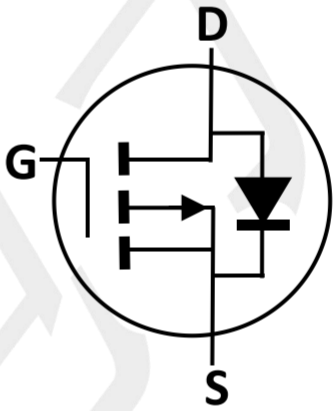
Package and Pin Configuration



DFN3X3-8

Marking:2523P

Circuit diagram



Equivalent Circuit

Absolute Maximum Ratings (T_A=25℃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	T_C=25°C	I_D	-3	A
	T_C=100°C		-1.6	
Pulsed Drain Current		I_{DM}	-10	A
Total Power Dissipation	T_C=25°C	P_{DTOT}	7.7	W
Operating Junction Temperature Range		T_J	-55 to +150	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C

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

PARAMETER		Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	PCB Mount (Note)	R_{thJA}	62	°C/W

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=-250μA	BV_{DSS}	-150	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	$V_{GS(th)}$	-2	-3	-4	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±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°C		--	--	-10	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= -10V, I_D= -1A	R_{DS}(on)	--	765	940	mΩ
	V_{GS}= -10V, T_J= 125°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} = 25Ω	$t_{d(on)}$	--	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 ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

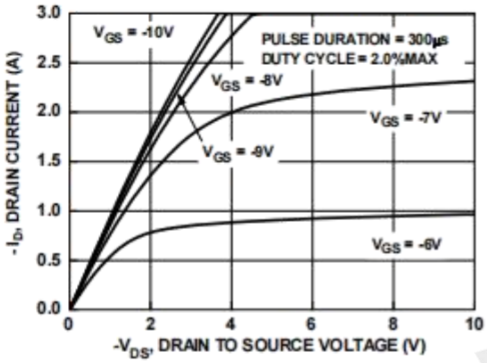


Figure 1. On-Region Characteristics

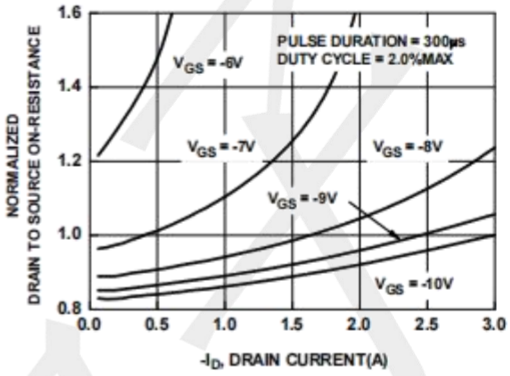


Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

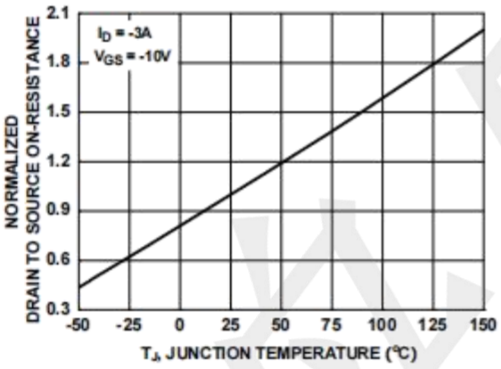


Figure 3. Normalized On-Resistance vs Junction Temperature

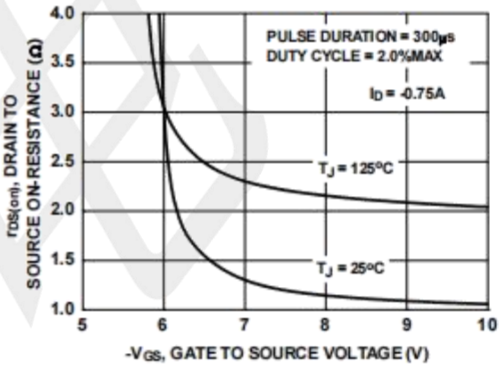


Figure 4. On-Resistance vs Gate to Source Voltage

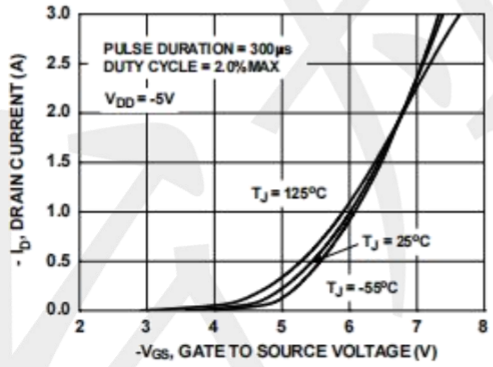


Figure 5. Transfer Characteristics

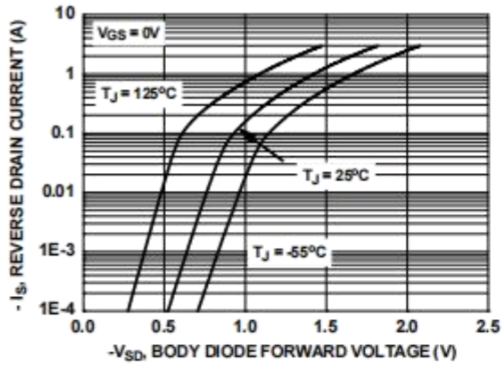


Figure 6. Source to Drain Diode Forward Voltage vs Source Current

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

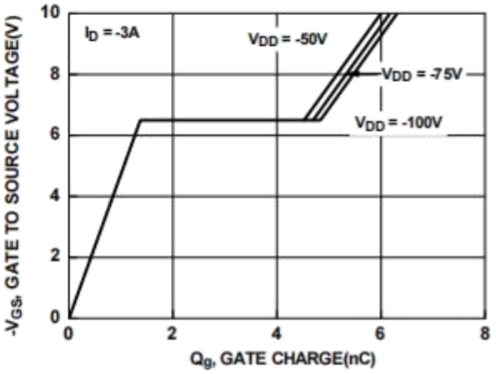


Figure 7. Gate Charge Characteristics

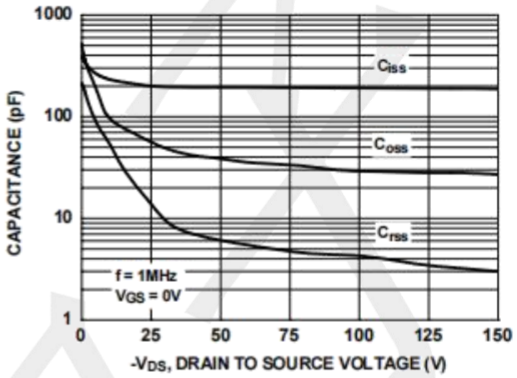


Figure8. Capacitance vs Drain to Source Voltage

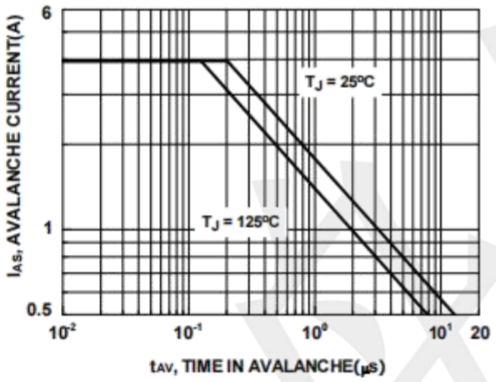


Figure9. Unclamped Inductive Switching Capability

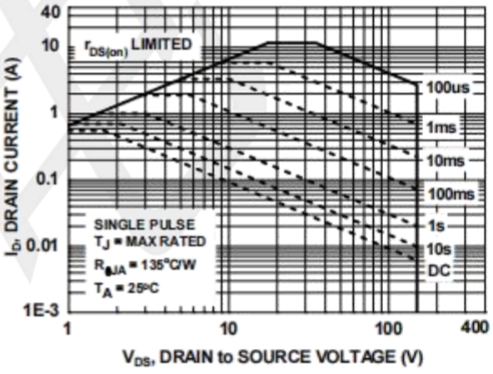


Figure 10. Forward Bias Safe Operating Area

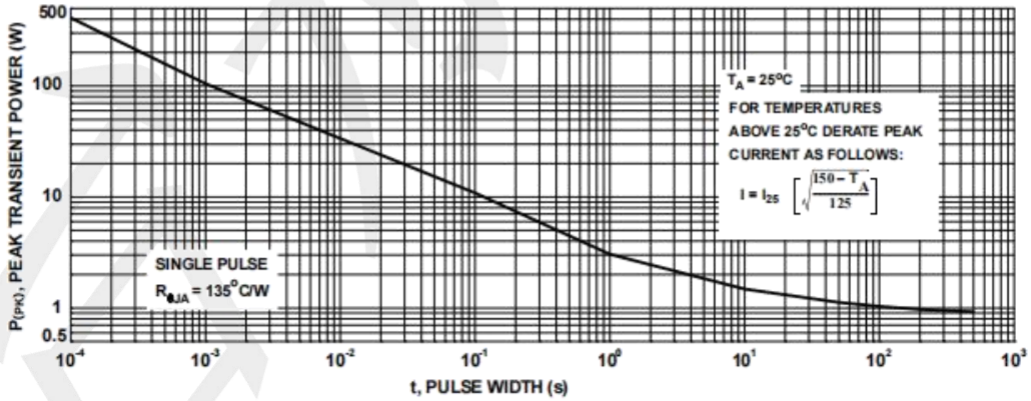
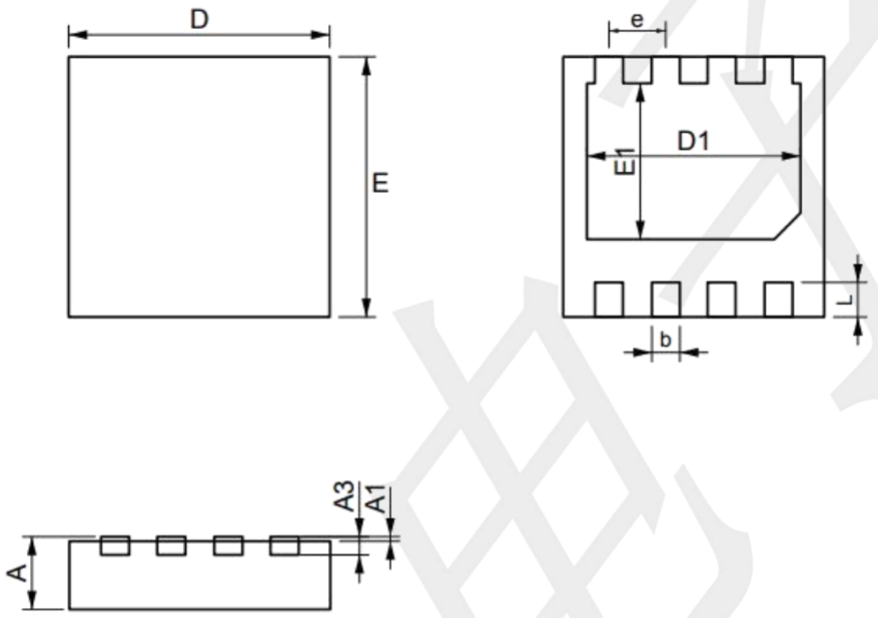


Figure 11. Single Pulse Maximum Power Dissipation

* The power dissipation PD is based on TJ(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