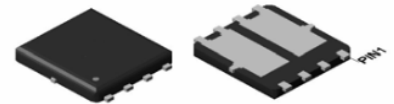


Features

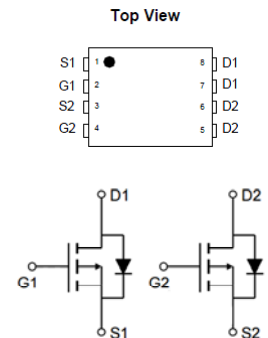
- Dual P-Channel, -5V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=-4.5\text{ V}$
- Fast Switching
- 100% Avalanche test
- Pb-free lead plating; RoHS compliant

V_{DS}	-30	V
$R_{DS(on),TYP}@ V_{GS}=-10\text{ V}$	11	mΩ
$R_{DS(on),TYP}@ V_{GS}=-4.5\text{ V}$	15	mΩ
I_D	-18	A

Dual PDFN5x6



Part ID	Package Type	Marking	Tape and reel information
VSP011P03MD	PDFN5x6	011P03MD	3000pcs/reel



Maximum ratings, at $T_J=25\text{ }^{\circ}\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	-30	V
I_S	Diode continuous forward current	$T_C=25^{\circ}\text{C}$ -18	A
I_D	Continuous drain current@ $V_{GS}=10\text{ V}$	$T_C=25^{\circ}\text{C}$ -18	A
		$T_C=100^{\circ}\text{C}$ -11.5	A
I_{DM}	Pulse drain current tested ②	$T_C=25^{\circ}\text{C}$ -70	A
P_D	Maximum power dissipation	$T_C=25^{\circ}\text{C}$ 35	W
V_{GS}	Gate-Source voltage	±20	V
T_{STG}	Storage temperature range	-55 to 155	$^{\circ}\text{C}$
T_J	Maximum Junction Temperature①	150	$^{\circ}\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3.5	$^{\circ}\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	45	$^{\circ}\text{C/W}$

Drain-Source Avalanche Ratings

EAS	Avalanche Energy, Single Pulsed ③	25	mJ
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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-30	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(Tc=25°C)	V _{DS} =-24V,V _{GS} =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	V _{DS} =-24V,V _{GS} =0V	--	--	-100	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	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =-10V, I _D =-10A	--	11	13	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =-4.5V, I _D =-10A	--	15	18	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-15V,V _{GS} =0V, f=1MHz	--	1950	--	pF
C _{oss}	Output Capacitance		--	320	--	pF
C _{rss}	Reverse Transfer Capacitance		--	225	--	pF
Q _g	Total Gate Charge	V _{DS} =-10V,I _D =-10A, V _{GS} =-10V	--	28	--	nC
Q _{gs}	Gate-Source Charge		--	4.5	--	nC
Q _{gd}	Gate-Drain Charge		--	9	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =-15V, I _D =-1A, R _G =6.8Ω, V _{GS} =-10V	--	9	--	nS
t _r	Turn-on Rise Time		--	10	--	nS
t _{d(off)}	Turn-Off Delay Time		--	22	--	nS
t _f	Turn-Off Fall Time		--	11	--	nS
Source- Drain Diode Characteristics@ T _J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _{SD} =-10A,V _{GS} =0V	--	-0.84	-1.3	V
t _{rr}	Reverse Recovery Time	T _J =25°C,I _{sd} =-8A, V _{GS} =0V	--	26	--	nS
Q _{rr}	Reverse Recovery Charge	di/dt=-100A/μs	--	35	--	nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Pulse width ≤ 300μs; duty cycles ≤ 2%.

 ③ Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = -10A, V_{GS} = -10V. Part not recommended for use above this value

Typical Characteristics

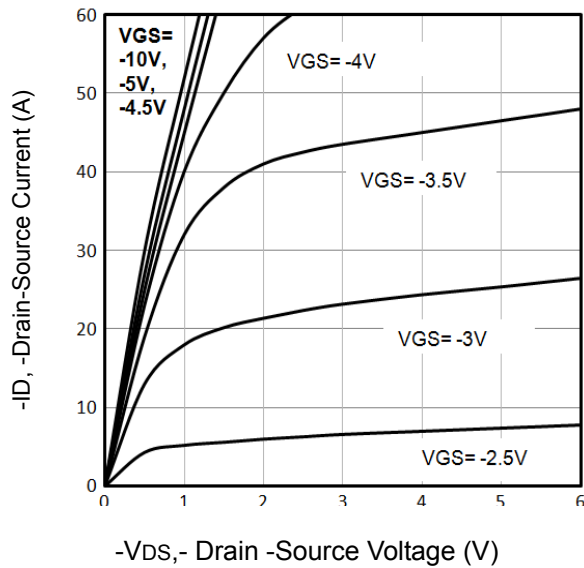


Fig1. Typical Output Characteristics

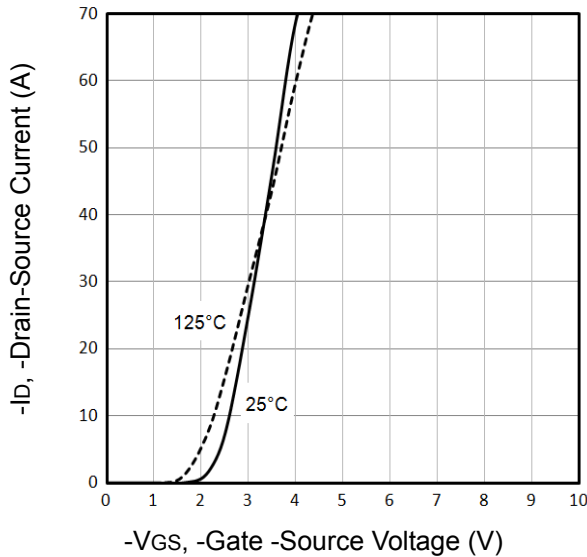


Fig3. Typical Transfer Characteristics

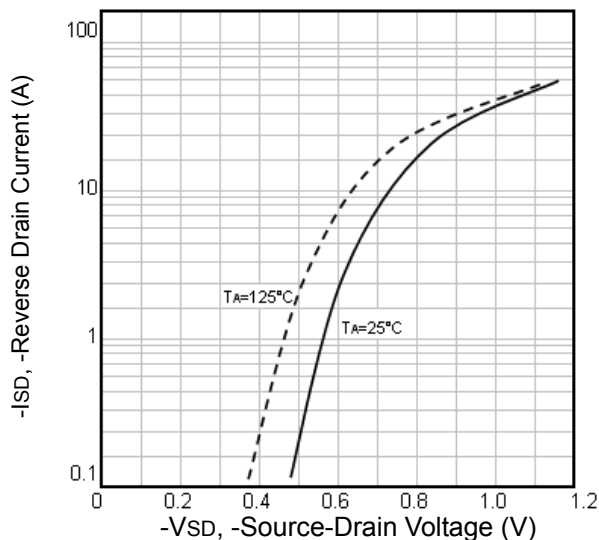


Fig5. Typical Source-Drain Diode Forward Voltage

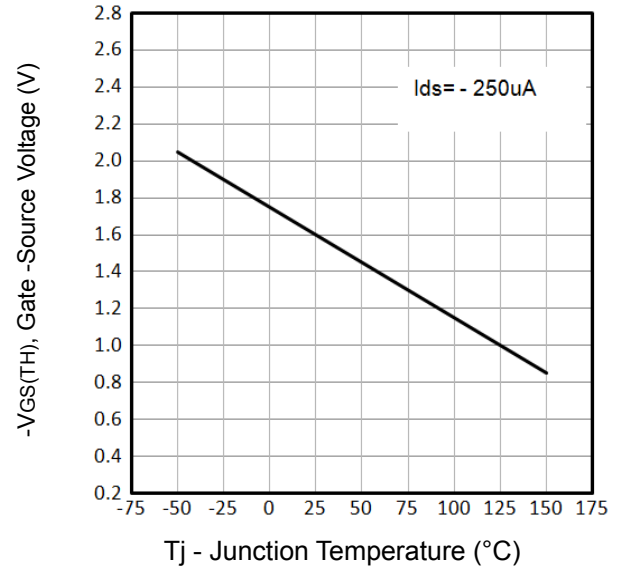


Fig2. Threshold Voltage Vs. Temperature

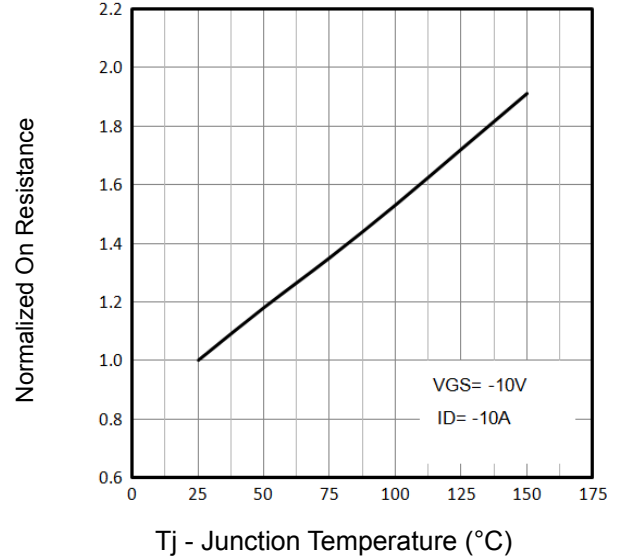


Fig4. Normalized On-Resistance Vs. Temperature

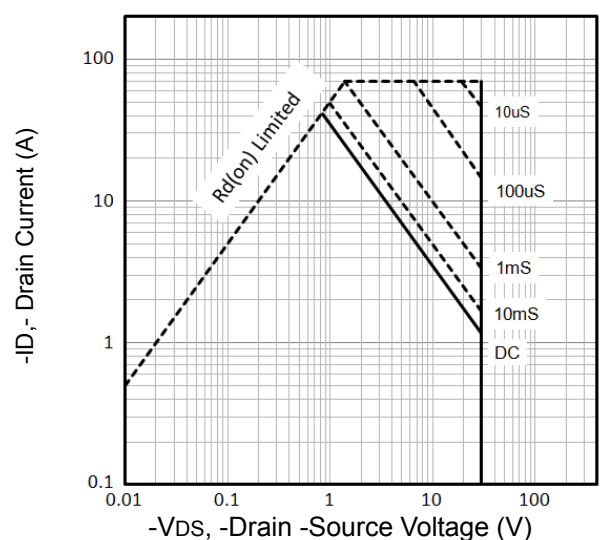


Fig6. Maximum Safe Operating Area

Typical Characteristics

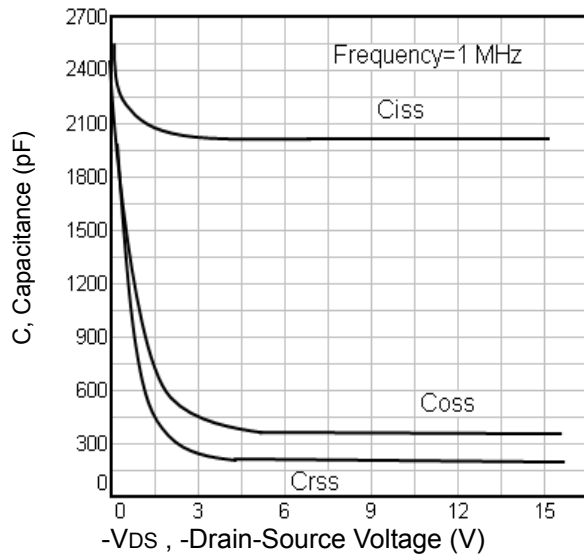


Fig7. Typical Capacitance Vs. Drain-Source Voltage

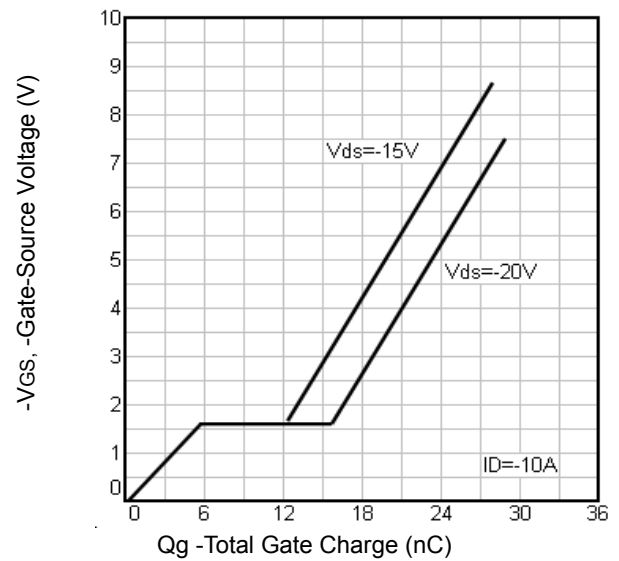


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

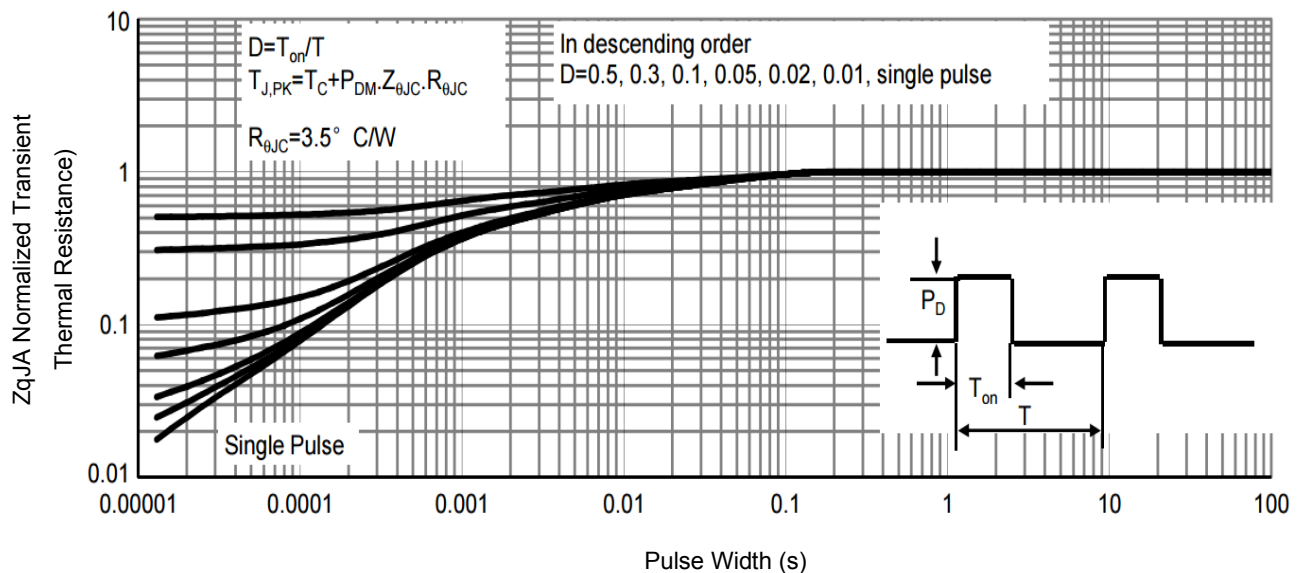


Fig9. Normalized Maximum Transient Thermal Impedance

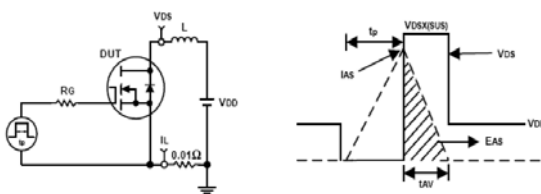


Fig10. Unclamped Inductive Test Circuit and Waveforms

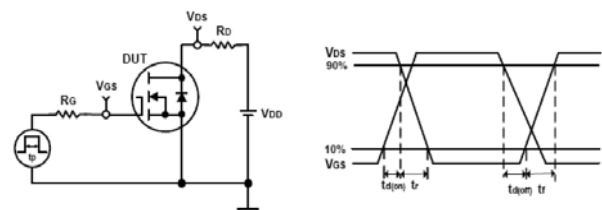
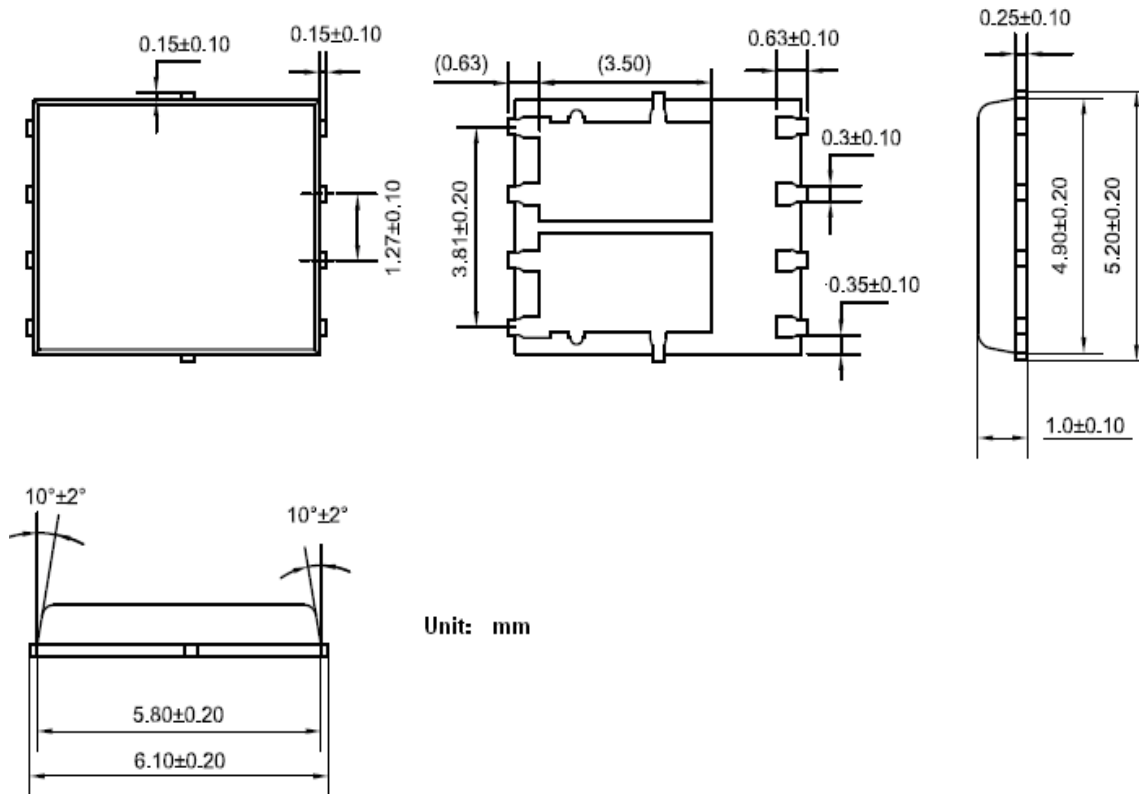


Fig11. Switching Time Test Circuit and waveforms

Dual DFN5x6 Package Outline



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