General Description

The WSP4984 is the highest performance trench N-ch MOSFET with extreme high cell density,which provide excellent RDSON and gate chargens for most of the synchronous buck converter applications .

The WSP4984 meet the RoHS and Green Product requirement,100% EAS guaranteed with full function reliability approved.

Product Summery

BVDSS	RDSON	ID
40V	18mΩ	10A

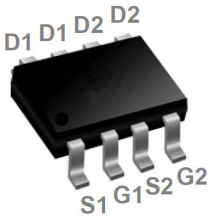
Applicatio

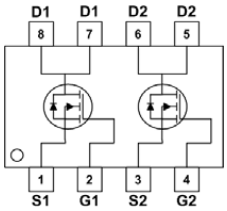
- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

SOP-8 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	10	A
I_D@T_C=70℃	Continuous Drain Current, V_{GS} @ 10V[1]	8	A
I_{DM}	Pulsed Drain Current[2]	50	A
P_D@T_A=25℃	Total Power Dissipation T_A=25°C	2.0	A
P_D@T_A=70℃	Total Power Dissipation T_A=70°C	1.3	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	90	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	40	℃/W

Notes

a. Surface Mounted on 1” x 1” FR4 Board.

b. Pulse width limited by maximum junction temperature

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=6.6A	---	15	20	mΩ
		V_{GS}=4.5V , I_D=5.9A	---	17.7	21	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.55	2.2	2.7	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=15V , I_D=6.6A	---	50	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=8.8A	10	13.6	16	nC
Q_{gs}	Gate-Source Charge		3.6	4.5	5.4	
Q_{gd}	Gate-Drain Charge		3.8	6.4	9	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,V_{GEN}=10V,R_G=6Ω, I_D=1A,R_L=15Ω.	---	6.4	---	ns
T_r	Rise Time		---	17	---	
$T_{d(off)}$	Turn-Off Delay Time		---	29.6	---	
T_f	Fall Time		---	16.8	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	1200	1500	1950	pF
C_{oss}	Output Capacitance		150	250	---	
C_{rss}	Reverse Transfer Capacitance		---	135	---	

Note :

1. Pulse test: PW <= 300us duty cycle <= 2%.
2. Guaranteed by design, not subject to production testing.

Typical Characteristics

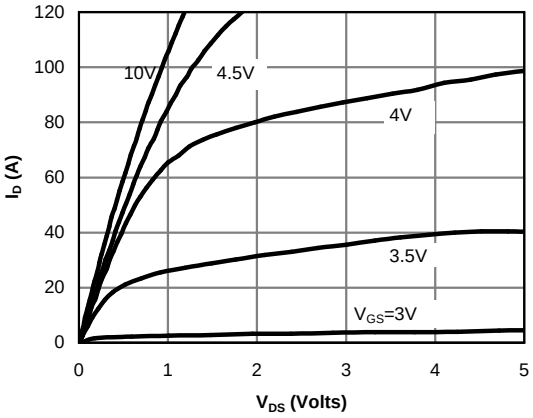


Fig 1: On-Region Characteristics (Note E)

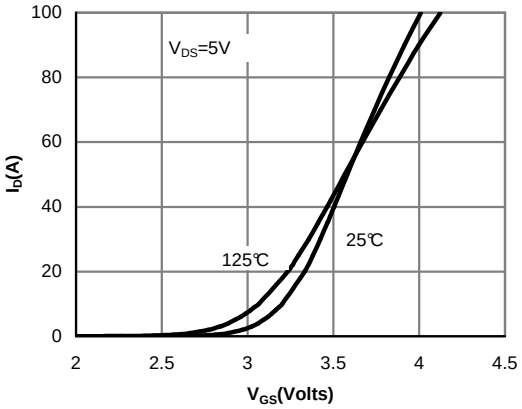


Figure 2: Transfer Characteristics (Note E)

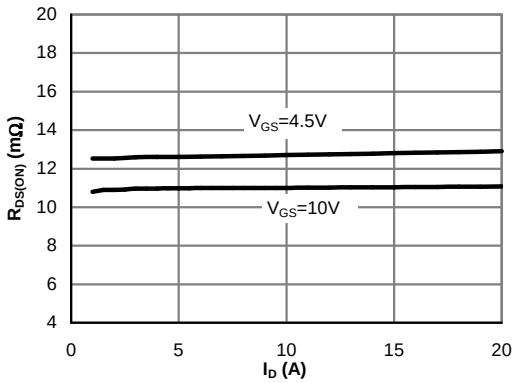


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

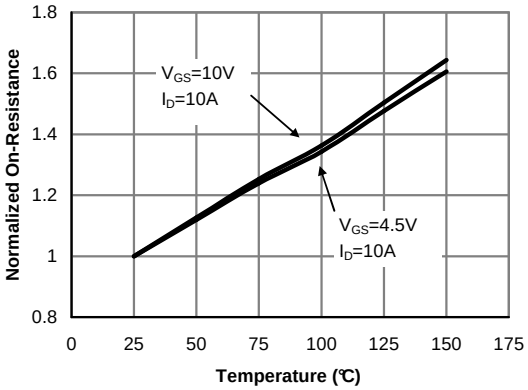


Figure 4: On-Resistance vs. Junction Temperature (Note E)

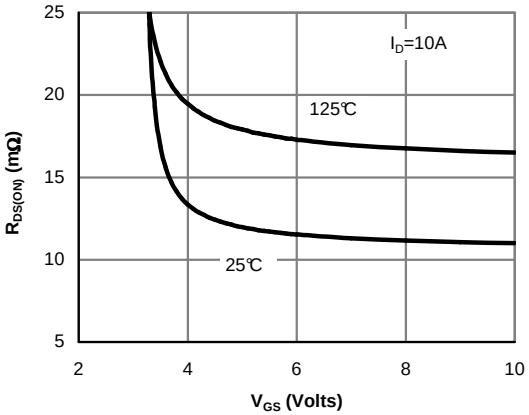


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

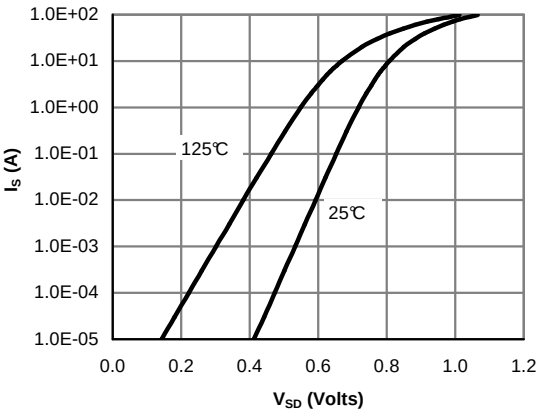


Figure 6: Body-Diode Characteristics (Note E)

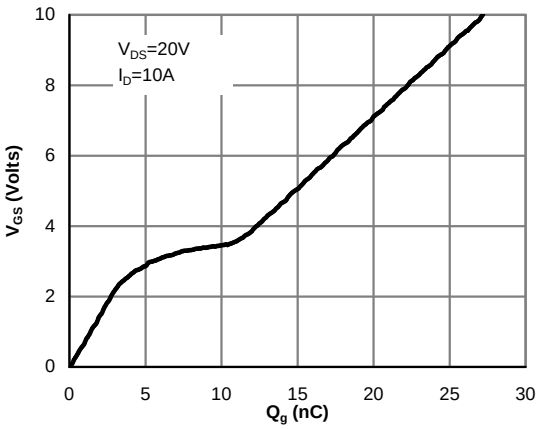


Figure 7: Gate-Charge Characteristics

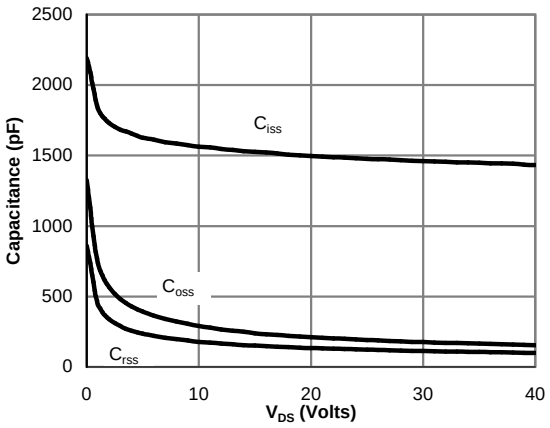


Figure 8: Capacitance Characteristics

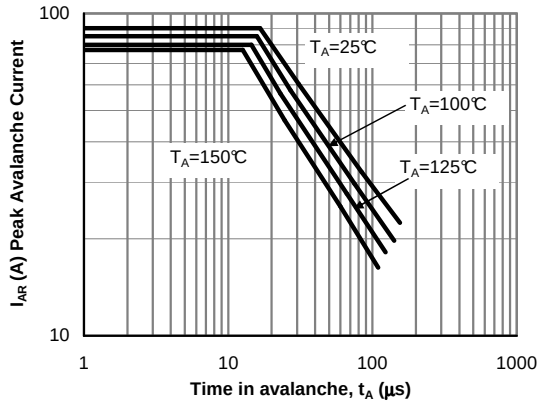


Figure 9: Single Pulse Avalanche capability (Note C)

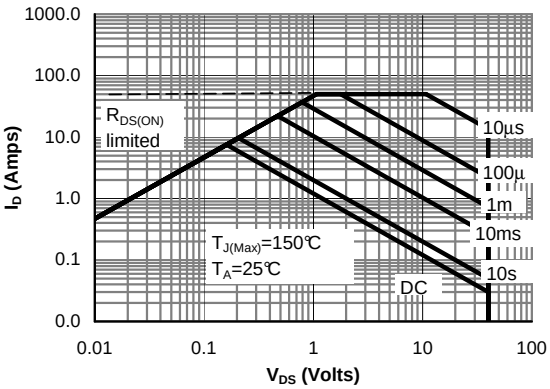


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

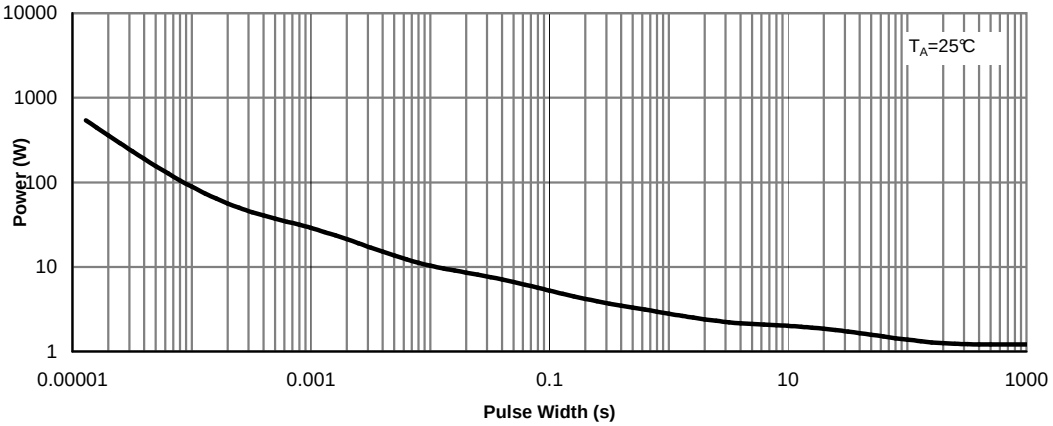


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

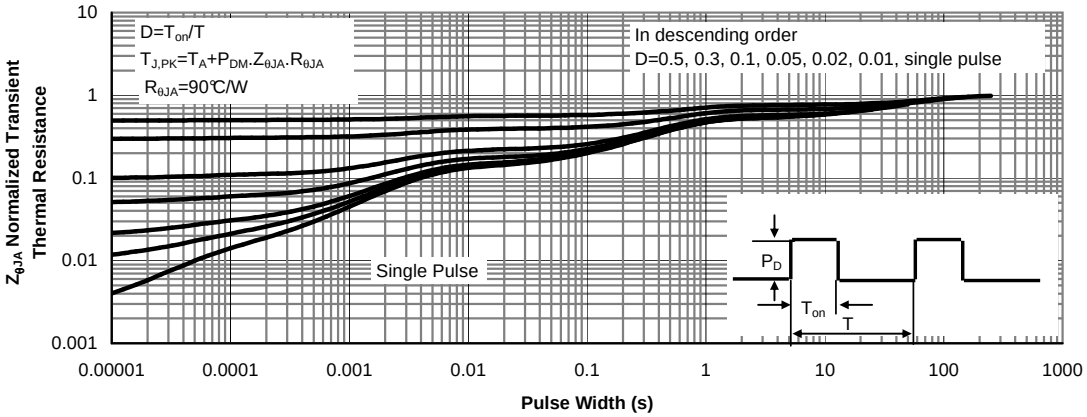


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

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