

General Description

WSD2067 combines a P-Channel enhancement mode power MOSFET which is produced with high cell density and DMOS trench technology and a low forward voltage schottky diode. the tiny and thin outline saves PCB consumption.

Applications

- Bidirectional blocking switch;
- DC-DC conversion applications;
- Li-battery charging;

Product Summary

V _{DSS}	R _{DSON} (typ.)	I _D
-20V	60mΩ@-4.5V	-3.5A
	75mΩ@-2.5V	
	105mΩ@-1.8V	

DFN3x2_8L_EP Pin Configuration

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-20	V
V _{GS}	Gate-Source Voltage	±8	V
I _D @T _c =25°C	Continuous Drain Current, V _{GS} = -4.5V ¹	-3.5	A
I _{DM}	300μS Pulsed Drain Current, (V _{GS} = -4.5V)	-25	A
V _R	Schottky Reverse Voltage	20	V
I _F	Schottky Continuous Forward Current	2	A
P _D	Power Dissipation Derating above T _A = 25°C (Note 2)	1.2	W
T _{STG} , T _J	Storage Temperature Range	-55 to 150	°C
R _{θJA}	Thermal Resistance Junction-ambient ¹	80	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	50	°C/W

Note1: Devices mounted on FR4 PCB with minima soldering pad;

Note2: For a single chip.

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	---	-0.01	---	V/ $^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-4.5V, I_D=-1A$	---	60	99	m Ω
		$V_{GS}=-2.5V, I_D=-1A$	---	75	120	
		$V_{GS}=-1.8V, I_D=-1A$	---	105	180	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.5	-0.7	-1.2	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3.13	---	mV/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-16V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	nA
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-1A$	---	16	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2	---	Ω
Q_g	Total Gate Charge (-4.5V)	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1A$	---	5.2	---	nC
Q_{gs}	Gate-Source Charge		---	0.7	---	
Q_{gd}	Gate-Drain Charge		---	1.8	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-10V, V_{GS}=-4.5V,$ $R_G=6\Omega, I_D=-1A,$	---	20	---	ns
T_r	Rise Time		---	18	---	
$T_{d(off)}$	Turn-Off Delay Time		---	300	---	
T_f	Fall Time		---	120	---	
C_{iss}	Input Capacitance	$V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$	---	420	---	pF
C_{oss}	Output Capacitance		---	180	---	
C_{riss}	Reverse Transfer Capacitance		---	90	---	

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, $t \leq 10\text{sec}$.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics of P-Channel MOSFET

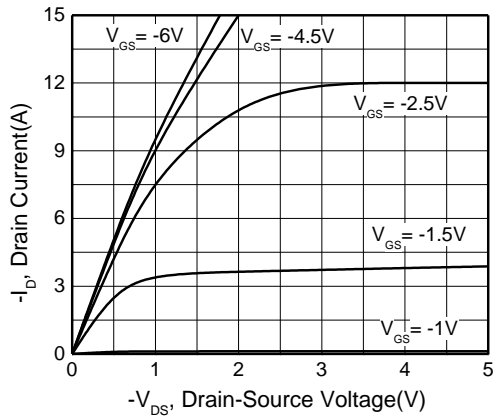


Fig 1. Output Characteristics

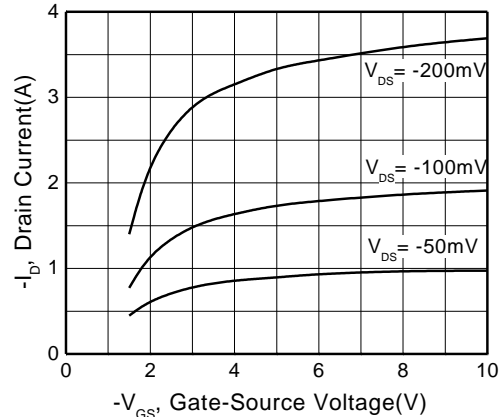


Fig 2. Transfer Characteristics

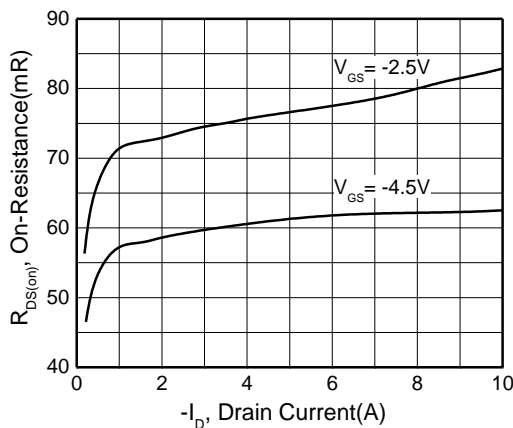


Fig 3. On-Resistance vs. Drain Current

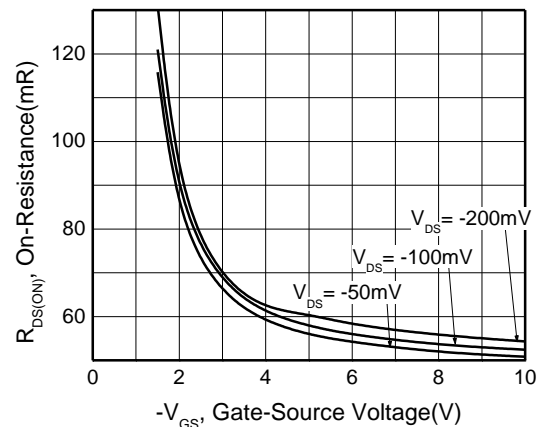


Fig 4. On-Resistance vs. Gate-Source Voltage

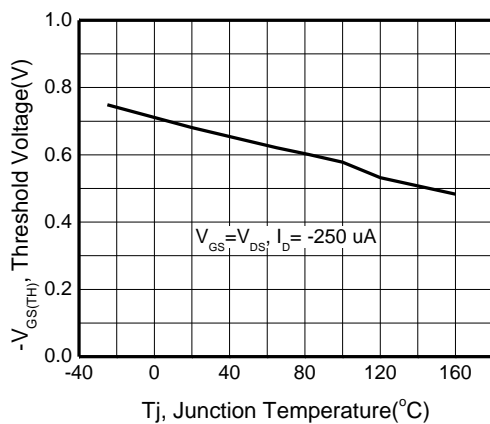


Fig 5. Threshold Voltage

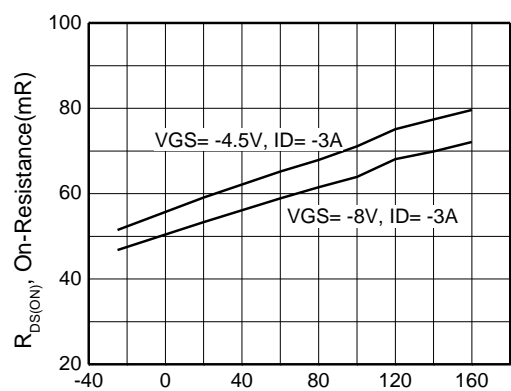


Fig 6. On-Resistance Temperature Coefficient

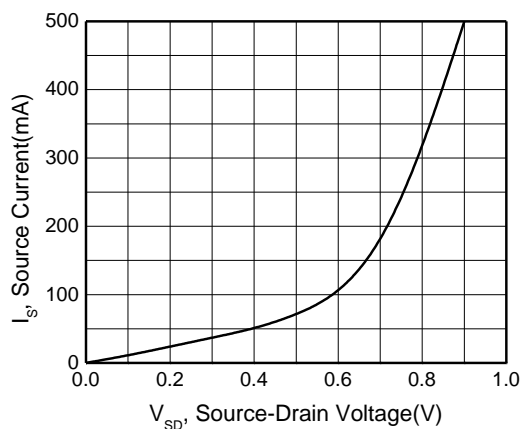


Fig 7. Body Diode Forward Characteristics

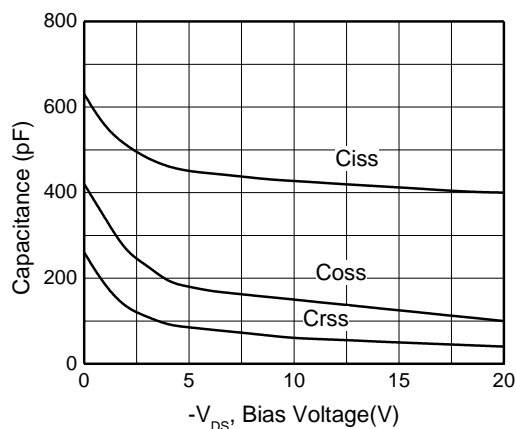


Fig 8. Capacitance

Typical Performance Characteristics of Schottky

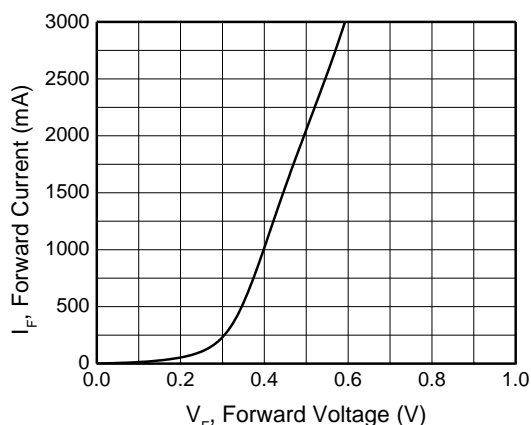


Figure 9. Schottky Forward Characteristics

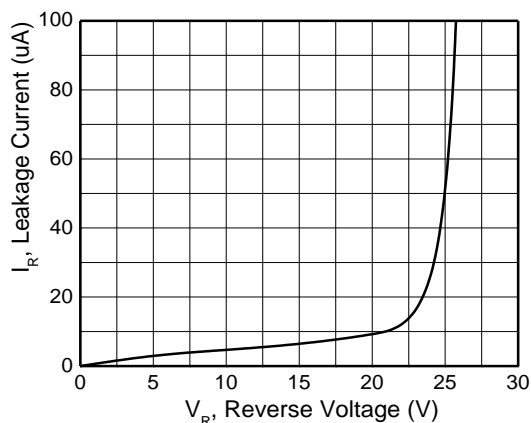


Figure10. Schottky Reverse Characteristics

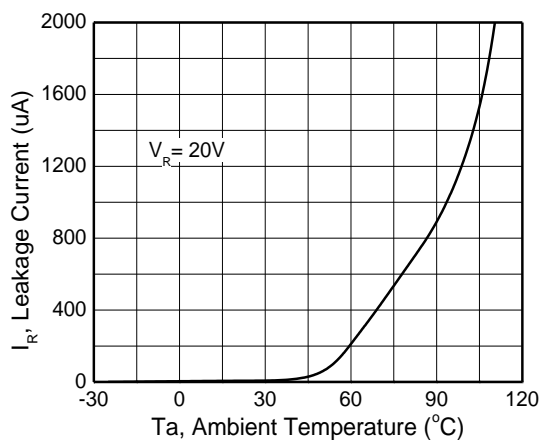
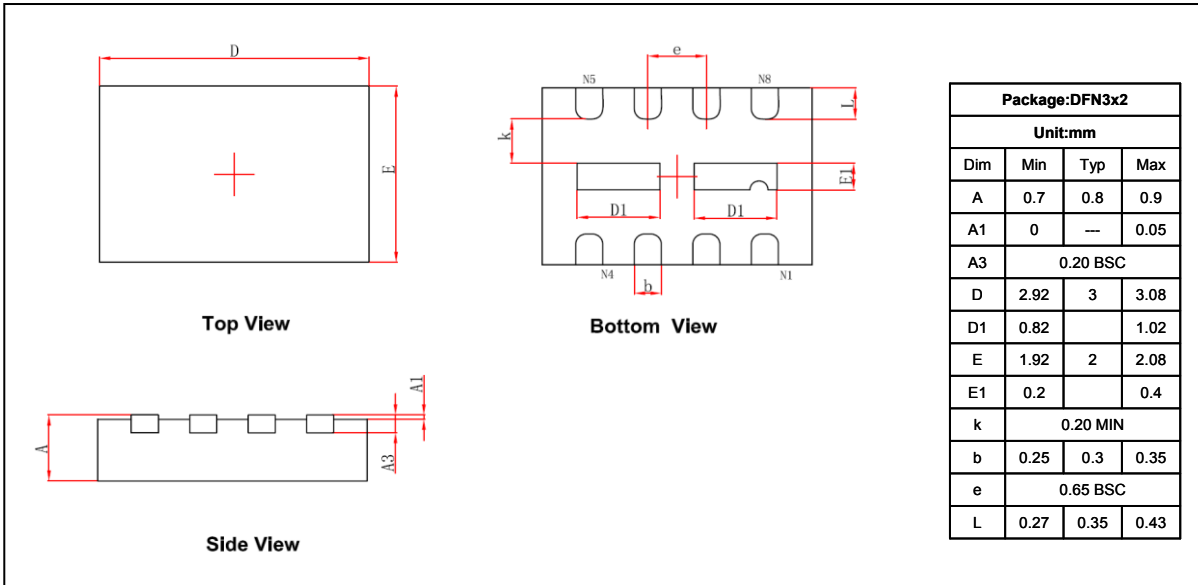


Figure 11. Leakage Current Vs. Temperature

Package Information DFN3x2_8L_EP





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