

LMP2165JZF 20V P-Channel Enhancement MOSFET

Features

- -20V, -4.1A, $R_{DS(ON)} = 65m\Omega @ V_{GS} = -4.5V$
- Improved dv/dt capability
- Fast switching
- Suit for -1.8V Gate Drive Applications
- Green Device Available
- SOT-23 package design

These devices are particularly suited for high efficiency fast switching applications.

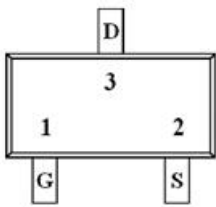
Product Description

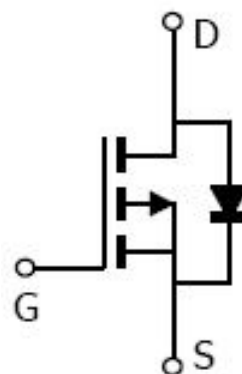
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

Applications

- Notebook
- Load Switch
- Hand-held Instruments

Pin Configuration

LMP2165JZF (SOT-23)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMP2165JZF	LMP2165	JZ	F	SOT-23	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
P1 XWM	P1	XWM

Absolute Maximum Ratings

(T_C=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		-20	V
V _{GS}	Gate-Source Voltage		±12	V
I _D	Continuous Drain Current	T _A =25°C	-4.1	A
		T _A =70°C	-3.6	
I _{DM}	Pulsed Drain Current ¹		-16.4	A
P _D	Power Dissipation(T _A =25°C)		1.56	W
	Power Dissipation(Derate above 25°C)		0.012	W/°C
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		80	°C/W

Electrical Characteristics

(T_J=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.4		-0.9	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V, V _{GS} =0V			-1	uA
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			-4.1	A
I _{SM}	Pulsed Source Current				-8.2	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-4.5A		52	65	mΩ
		V _{GS} =-2.5V, I _D =-3A		73	85	
		V _{GS} =-1.8V, I _D =-1.5A		100	130	
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-4.5A		10		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A			-1	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		515	745	pF
C _{oss}	Output Capacitance			55	80	
C _{rss}	Reverse Transfer Capacitance			20	30	
Q _g	Total Gate Charge ^{2,3}	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-3A		6.4	9	nC
Q _{gs}	Gate-Source Charge ^{2,3}			0.9	1	
Q _{gd}	Gate-Drain Charge ^{2,3}			1.6	3	
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =-10V, I _D =-1A, V _{GS} =-4.5V, R _G =25Ω		5	9	ns
T _r	Turn-On Rise Time ^{2,3}			17.4	33	
t _{d(off)}	Turn-Off Delay Time ^{2,3}			40.7	80	
T _f	Turn-Off Fall Time ^{2,3}			11.4	23	

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature..

Typical Performance Characteristics

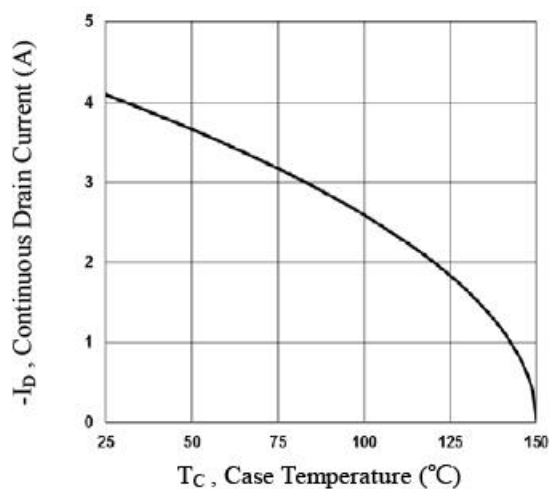
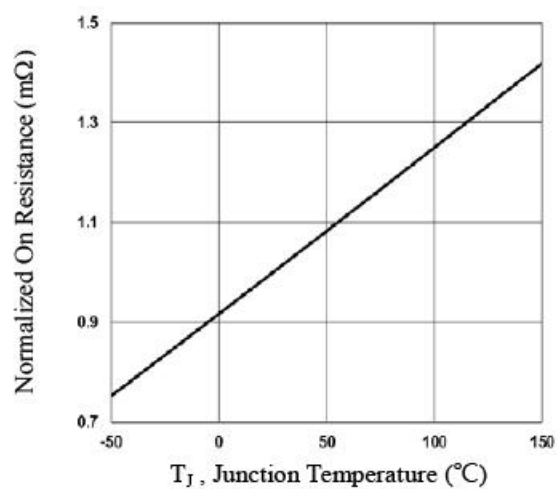
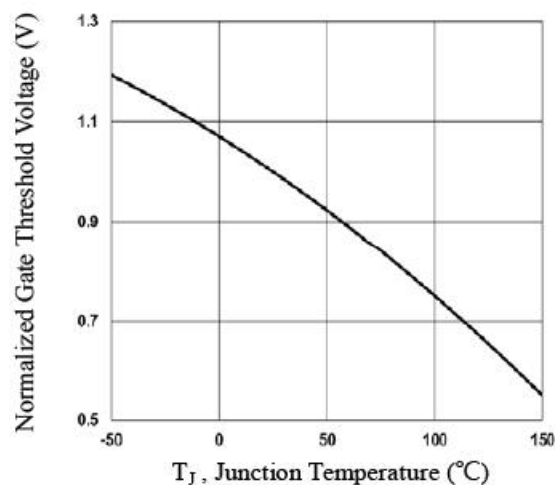
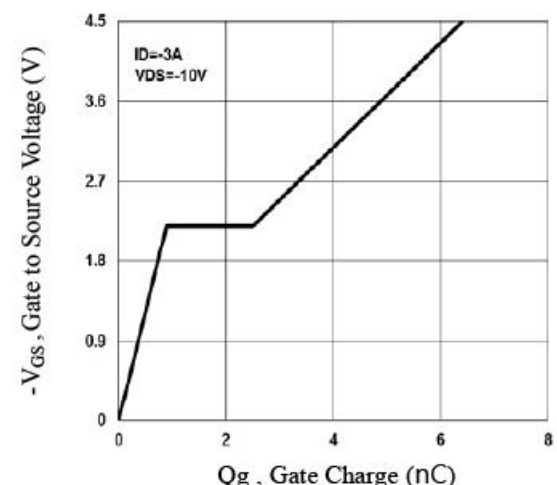

Fig.1 Continuous Drain Current vs T_C

Fig.2 Normalized $R_{DS(on)}$ vs T_J

Fig.3 Normalized V_{TH} vs T_J


Fig.4 Gate Charge Waveform

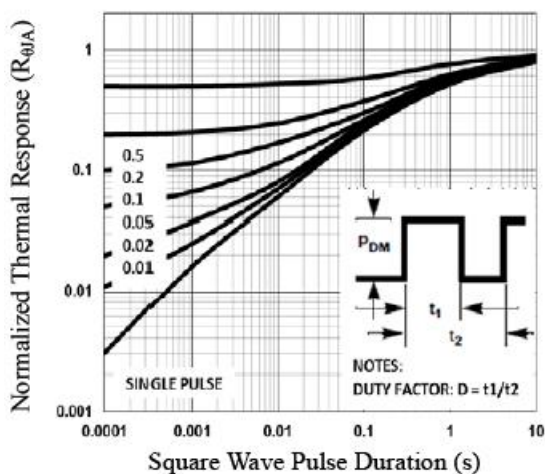


Fig.5 Normalized Transient Impedance

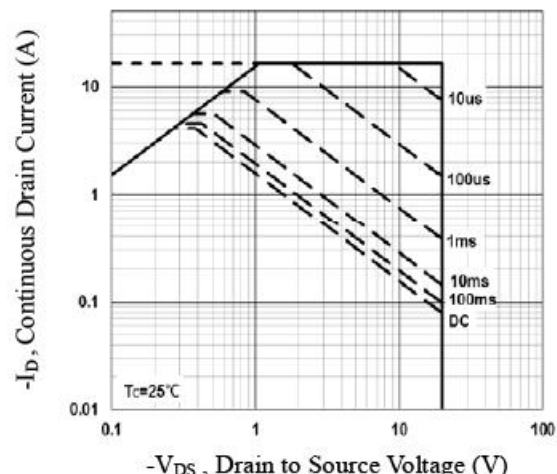
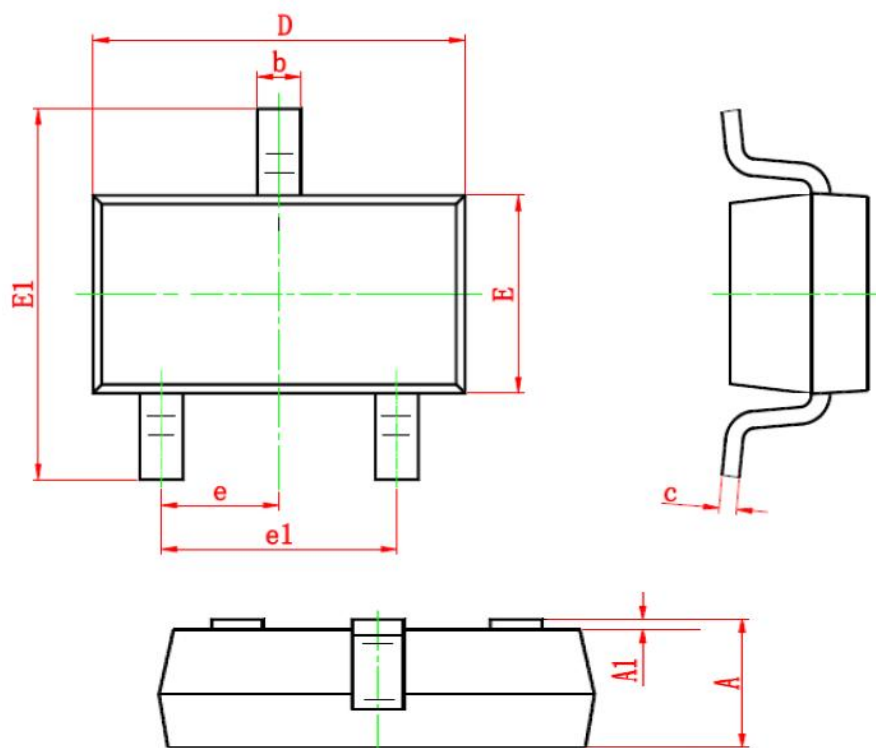


Fig.6 Maximum Safe Operating Area

Package Dimension
SOT-23


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.140	0.035	0.045
A1	0.000	0.140	0.000	0.006
b	0.300	0.510	0.012	0.020
c	0.070	0.180	0.003	0.007
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.100	2.640	0.083	0.104
e	0.950 TYP		0.037 TYP	
e1	1.780	2.050	0.070	0.081