

LMP2165X5F 20V P-Channel Enhancement MOSFET

Features

- -20V/-1.5A, $R_{DS(ON)} = 70m\Omega @ V_{GS} = -4.5V$
- -20V/-1.2A, $R_{DS(ON)} = 90m\Omega @ V_{GS} = -2.5V$
- -20V/-0.8A, $R_{DS(ON)} = 130m\Omega @ V_{GS} = -1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

These devices are particularly suited for low Voltage power management, such as smart Phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

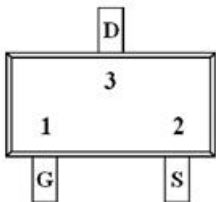
Product Description

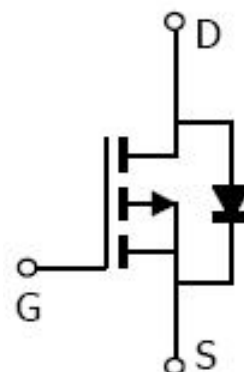
LMP2165, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Pin Configuration

LMP2165X5F (SOT-323)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMP2165X5F	LMP2165	X5	F	SOT-323	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
P1 WMM	P1	WMM

Absolute Maximum Ratings

(T_A=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	-2.1	A
		T _A =70°C	-1.7	
I _{DM}	Pulsed Drain Current		-8	A
P _D	Power Dissipation		0.46	W
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 ¹		270	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient ²		205	°C/W

Note:

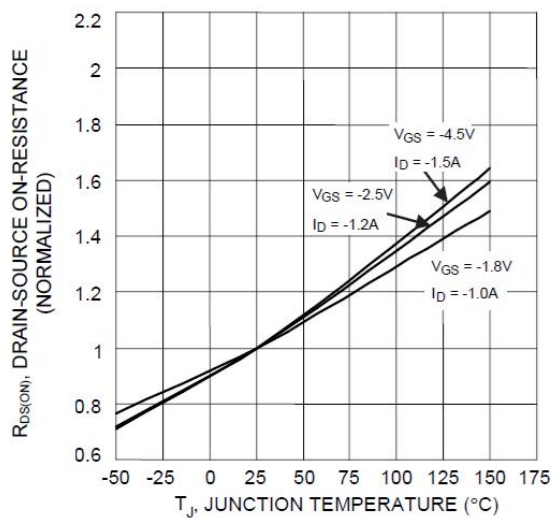
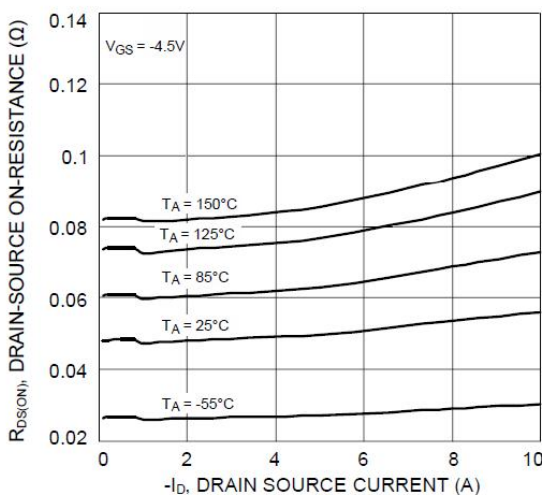
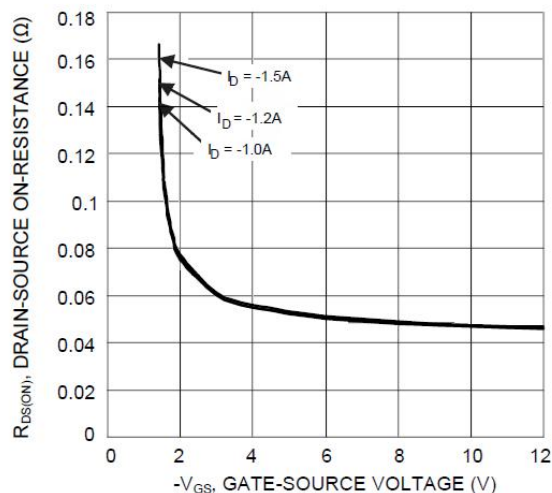
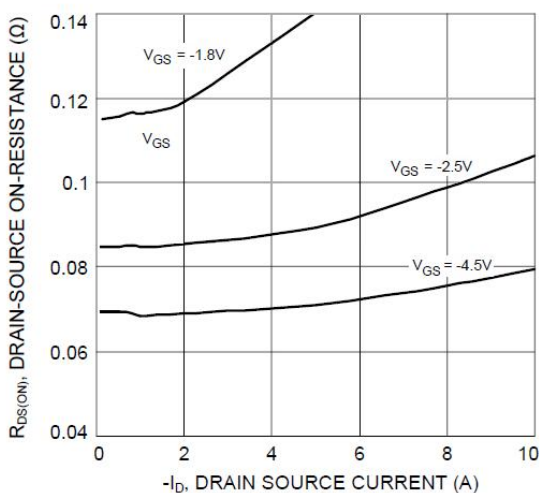
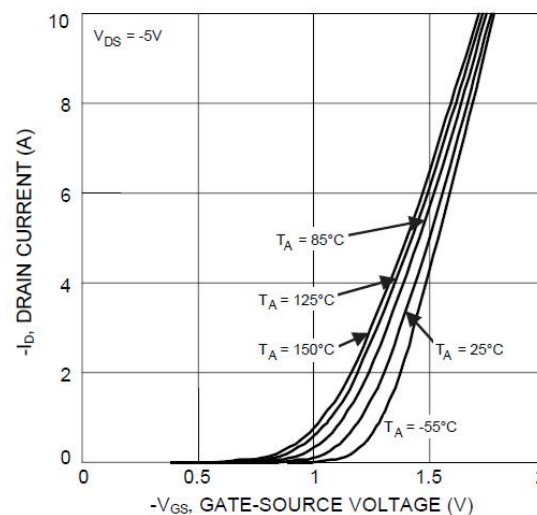
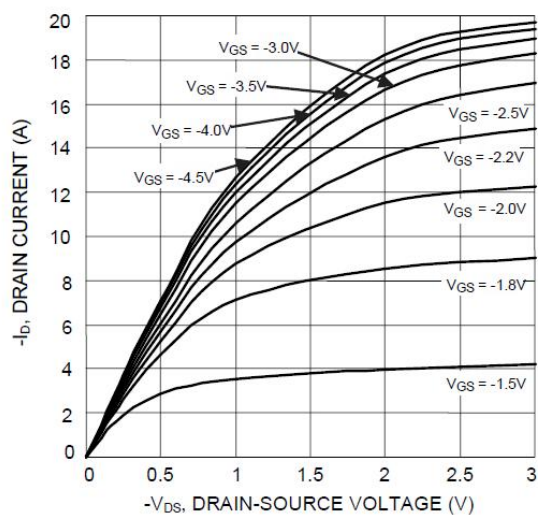
1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

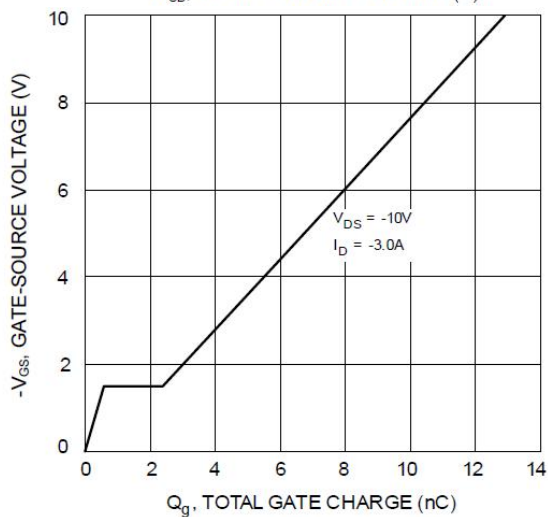
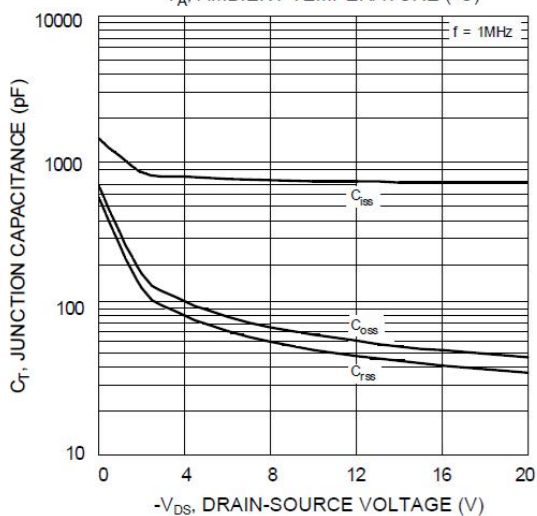
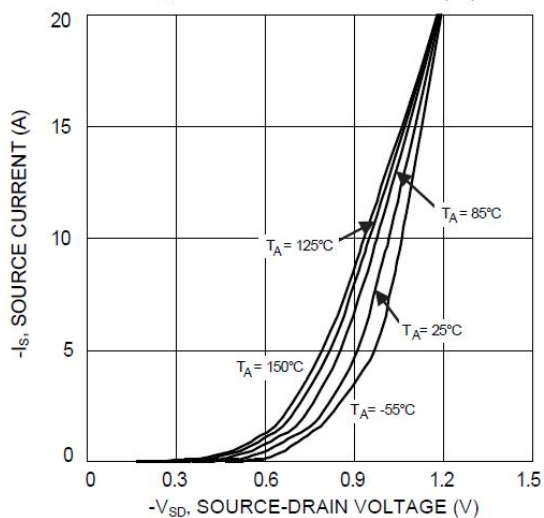
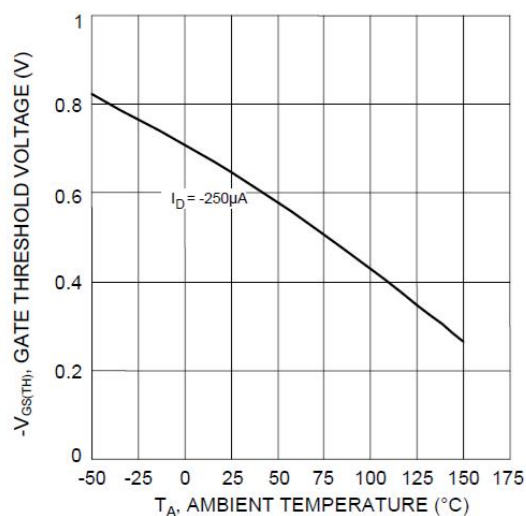
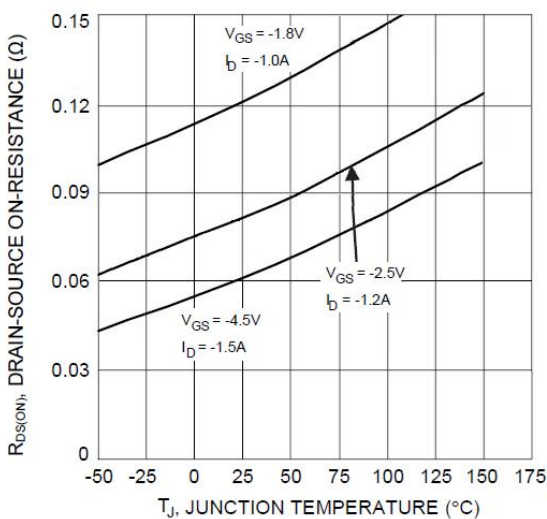
Electrical Characteristics

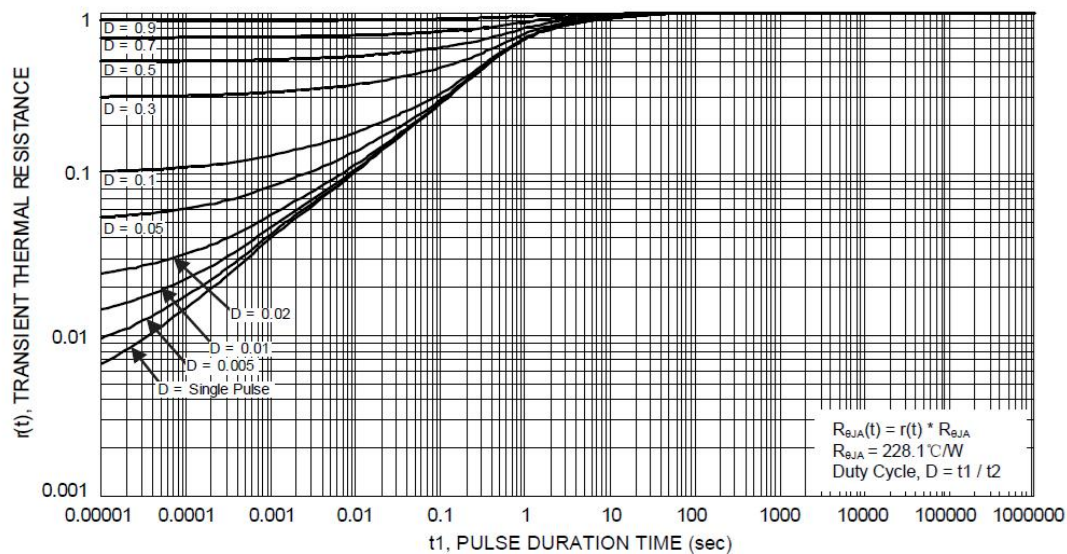
(T_A=25°C Unless otherwise noted)

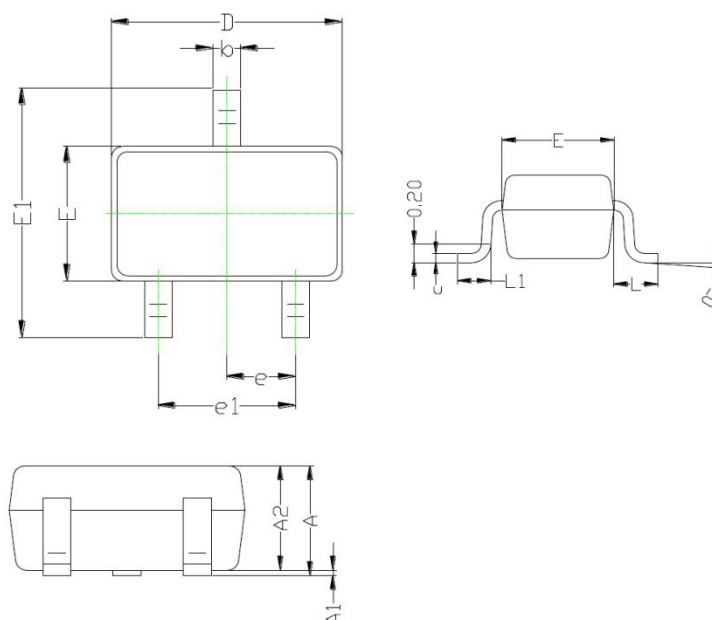
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.4		-0.9	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-16V, V _{GS} =0V			-1	uA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-1.5A		65	70	mΩ
		V _{GS} =-2.5V, I _D =-1.2A		87	90	
		V _{GS} =-1.8V, I _D =-0.8A		120	130	
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-1.5A		4		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1.6A		-0.8	-1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		600		pF
C _{oss}	Output Capacitance			60		
C _{rss}	Reverse Transfer Capacitance			52		
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-1.6A		8		nC
Q _{gs}	Gate-Source Charge			1		
Q _{gd}	Gate-Drain Charge			1.7		
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, I _D =-1A, V _{GS} =-4.5V, R _L =2.7Ω, R _G =3.3Ω		4		ns
T _r	Turn-On Rise Time			20		
t _{d(off)}	Turn-Off Delay Time			50		
T _f	Turn-Off Fall Time			5.2		

Typical Performance Characteristics



Typical Performance Characteristics (continue.)


Typical Performance Characteristics (continue.)


Package Dimension
SOT-323


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.015
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.086
E	1.150	1.350	0.059	0.053
E1	2.150	2.400	0.084	0.094
e	0.650 TYP		0.025 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.450	0.010	0.017
θ	0°	8°	0°	8°