LMP2145X5F 20V P-Channel Enhancement MOSFET

Features

- -20V/-4A, $R_{DS(ON)}$ =55mΩ@V_{GS} = -4.5V
- -20V/-3A, $R_{DS(ON)}$ =75mΩ@V_{GS} = -2.5V
- -20V/-2A, $R_{DS(ON)}$ =100mΩ@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

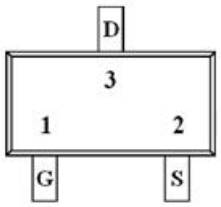
LMP2145, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

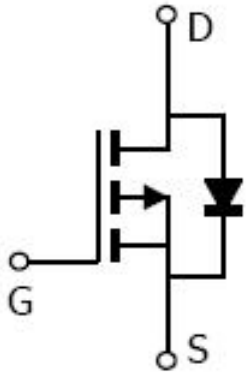
Pin Configuration

LMP2145X5F (SOT-323)



Top Views

Pin	Description
1	Gate
2	Source
3	Drain



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Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMP2145X5F	LMP2145	X5	F	SOT-323	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
45 XW	45	XW

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current[2] (Steady State)	T_A=25ºC	-2.3	A
		T_A=70ºC	-1.9	
I_{DM}	Pulsed Drain Current		-10	A
P_D	Power Dissipation (T_A=25ºC)		0.46	W
T_J	Operating Junction Temperature		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[1]		270	ºC/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[2]		205	ºC/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.

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Electrical Characteristics

(T_A=25ºC 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=-4A		49	55	mΩ
		V_{GS}=-2.5V, I_D=-3A		66	75	
		V_{GS}=-1.8V, I_D=-2A		90	100	
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-3.6A		7.8		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		616		pF
C_{oss}	Output Capacitance			86		
C_{rss}	Reverse Transfer Capacitance			65		
Q_g	Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-2.3A		6.5		nC
Q_{gs}	Gate-Source Charge			1.2		
Q_{gd}	Gate-Drain Charge			0.9		
$t_{d(on)}$	Turn-On Time	V_{DD}=-10V, I_D=-1A, V_{GS}=-4.5V, R_L=4Ω, R_G=6Ω		16		ns
T_r				27		
$t_{d(off)}$	Turn-Off Time			40		
T_f				34		

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Typical Performance Characteristics

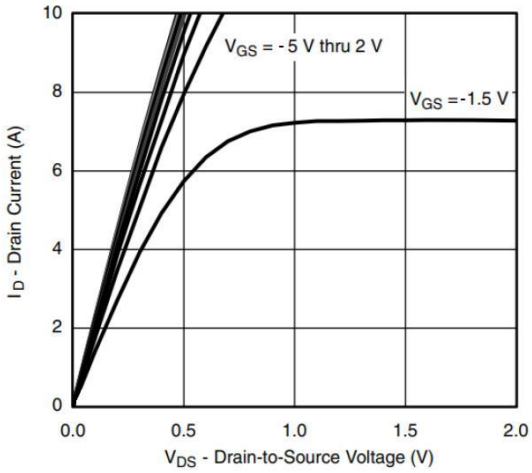

Fig.1 Typical Output Characteristics

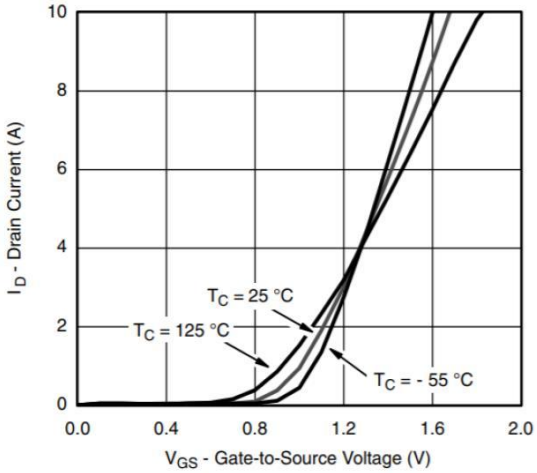

Fig.2 Typical Transfer Characteristics

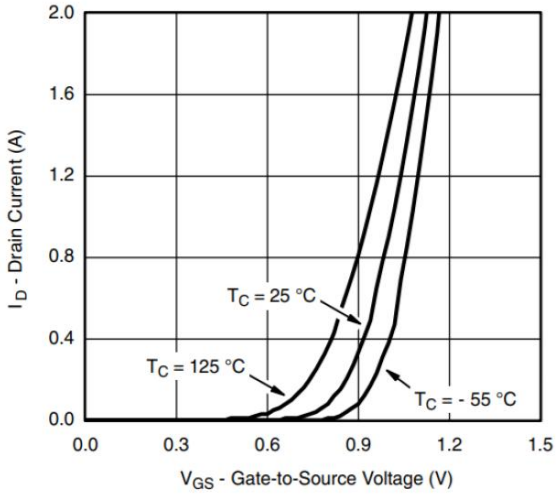

Fig.3 Typical Drain-Source On-Resistance vs. I_D and T_C

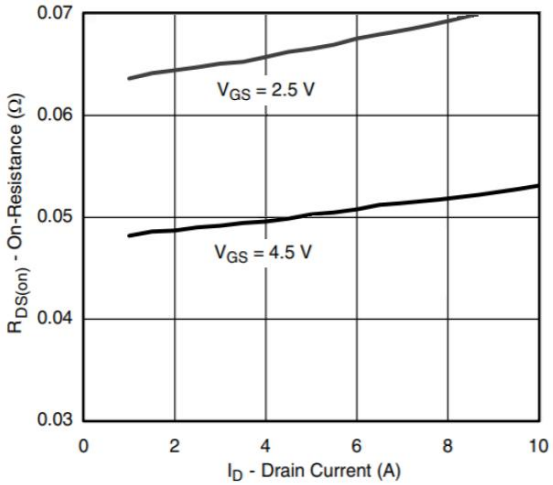

Fig.4 Typical On-Resistance vs. I_D and V_{GS}

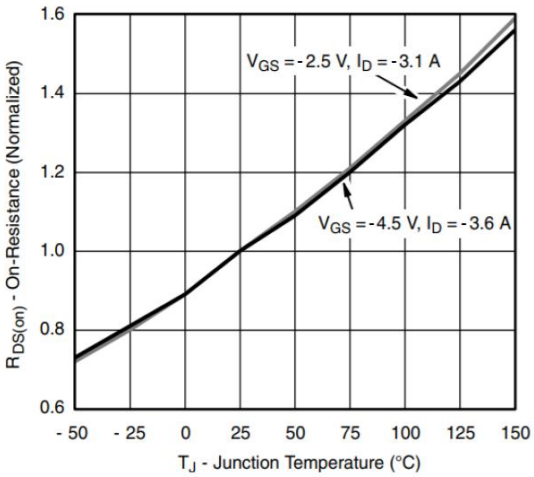

Fig.5 On-Resistance Variation with T_J

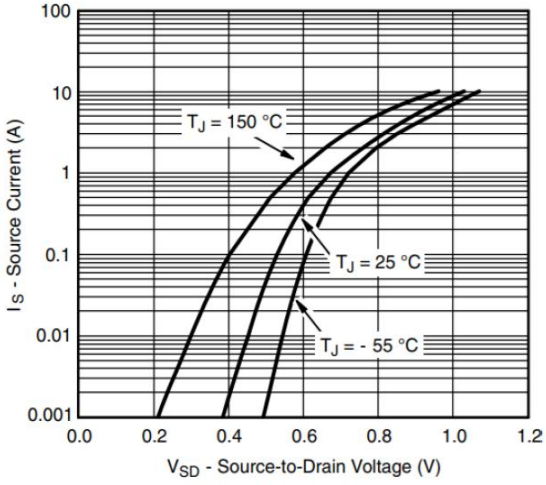

Fig.6 Diode Forward Voltage vs. Current

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Typical Performance Characteristics (continue.)

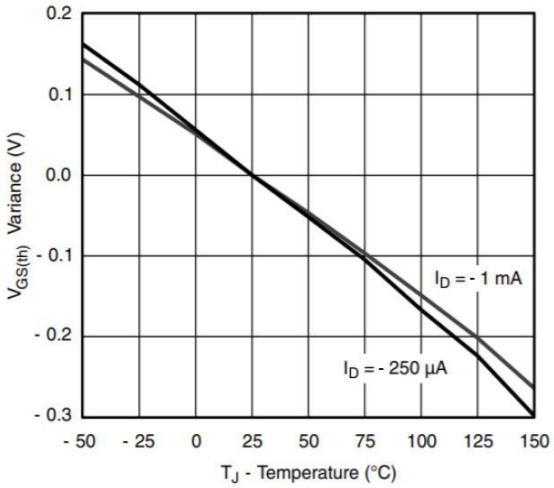

Fig.7 Gate Threshold Variation vs. T_J

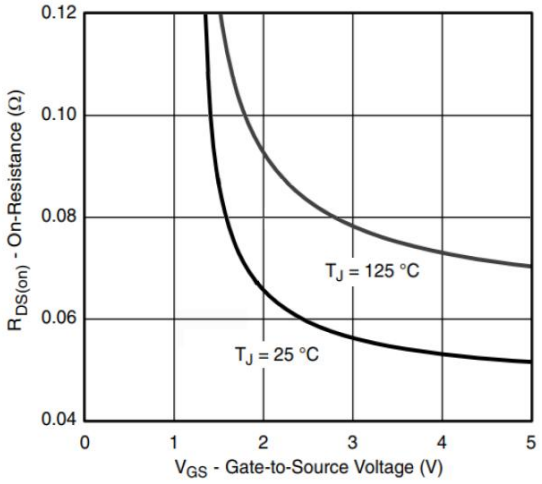

Fig.8 Typical Transfer Characteristic

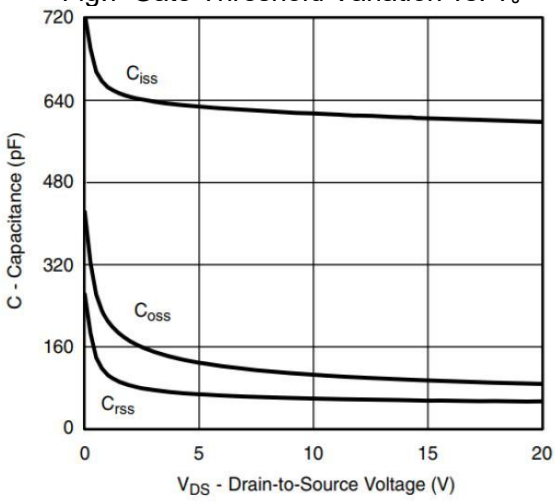

Fig.9 Typical Capacitance

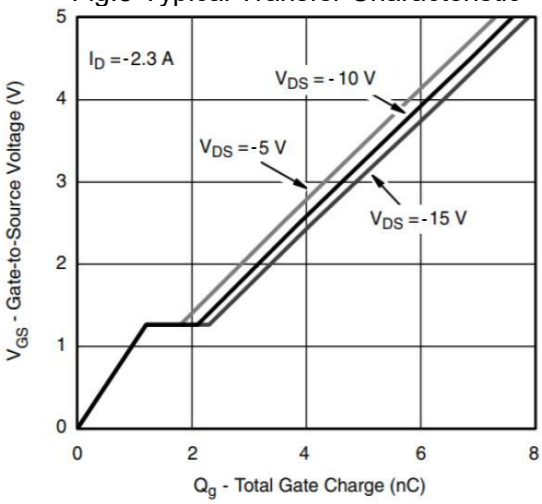

Fig.10 Gate Charge

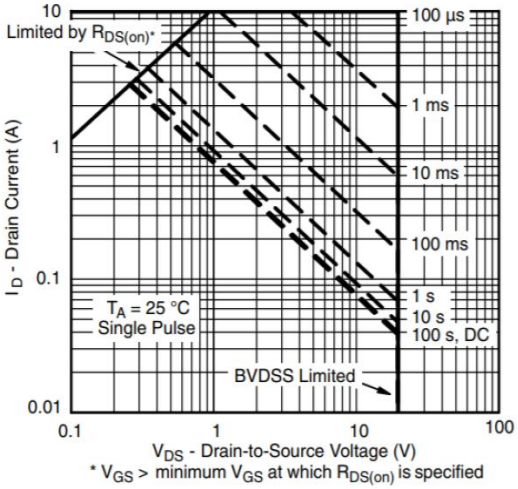

Fig.11 SOA, Safe Operation Area

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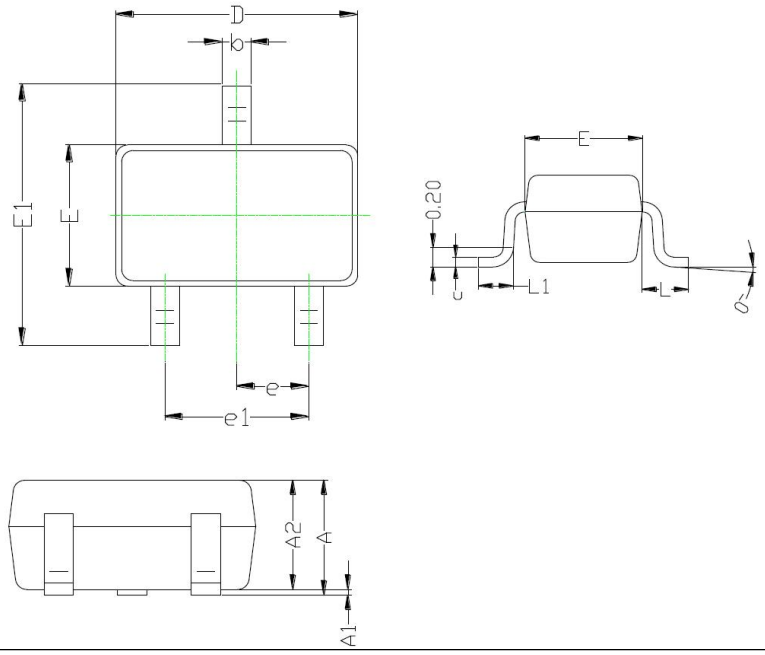
Package Dimension

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	0.045	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°

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