

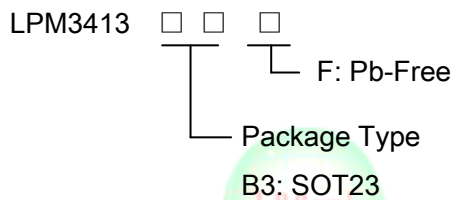


P-Channel Enhancement Mode Field Effect Transistor

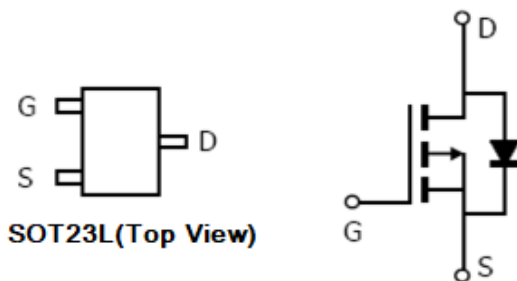
General Description

The LPM3413 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for using as a load switch or in PWM applications. Standard Product LPM3413 is Pb-free. LPM3413 is a Green Product ordering option. LPM3413 are electrically identical.

Order Information



Pin Configurations



Features

- ◆ -20V/2.0A, $R_{DS(ON)} \leq 130m\Omega(max.)@V_{GS}=-2.5V$
- ◆ -20V/3A, $R_{DS(ON)} \leq 95m\Omega(max.)@V_{GS}=-4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ SOT23 Package

Applications

- ✧ Portable Media Players/MP3 players
- ✧ Cellular and Smart mobile phone
- ✧ LCD
- ✧ DSC Sensor
- ✧ Wireless Card

Marking Information

Device	Marking	Package	Shipping
LPM3413	A1XX	SOT23	3K/REEL

Pin Description

Pin Number	Pin Description
1	Gate Pin
2	Source Pin
3	Drain Pin



Absolute Maximum Ratings

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	-3	A
	$T_A = 70^\circ\text{C}$		-2.0	
Pulsed Drain Current		I_{DM}	-10	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.4	W
	$T_A = 70^\circ\text{C}$		0.9	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal resistance ratings

Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	125	$^\circ\text{C/W}$





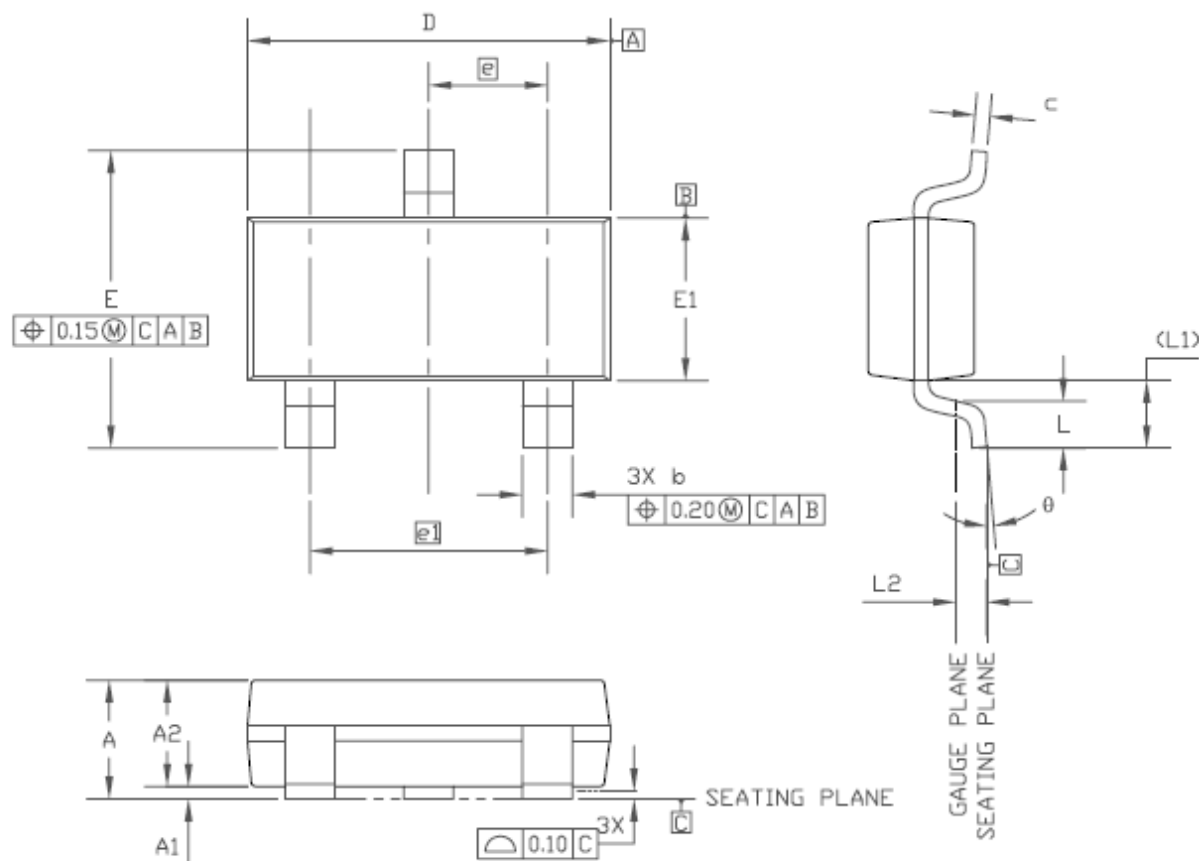
Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ.	Max	Units
STATIC PARAMETERS						
BVDSS	Drain-Source Breakdown Voltage	$I_D=-250\mu A, V_{GS}=0V$	-20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^{\circ}C$ $T_J=55^{\circ}C$			-1 -5	μA
I_{GSS}	Gate-Body leakage current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.3	-0.55	-1	V
$I_{D(ON)}$	On state drain current	$V_{GS}=-4.5V$		-3		A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-3A$		81	95	m Ω
		$V_{GS}=-2.5V, I_D=-2.0A$		108	130	m Ω
		$V_{GS}=-1.8V, I_D=-1A$		146	190	m Ω
g_{FS}	Forward Trans-conductance	$V_{GS}=-4.5V, I_D=-3A$		10		S
V_{SD}	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$		-0.7	-1	V
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-10V, f=1MHz$	500	540	660	pF
C_{oss}	Output Capacitance		50	75	100	pF
C_{rss}	Reverse Transfer Capacitance		30	50	70	pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-3A$	4.8	6	7	nC
Q_{gs}	Gate Source Charge		1	1.3	1.6	nC
Q_{gd}	Gate Drain Charge		1	1.8	2.5	nC
$t_{D(on)}$	Turn-On DelayTime	$V_{GS}=-4.5V, V_{DS}=-10V, R_L=3.3\Omega, R_{GEN}=3\Omega$		10		nS
t_r	Turn-On Rise Time			12.5		
$t_{D(off)}$	Turn-Off DelayTime			44		
t_f	Turn-Off Fall Time			22		
t_{rr}	Body Diode Reverse Recovery Time	$I_F=-3A, di/dt=100A/\mu s$		21		ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F=-3A, di/dt=100A/\mu s$		7.5		nC

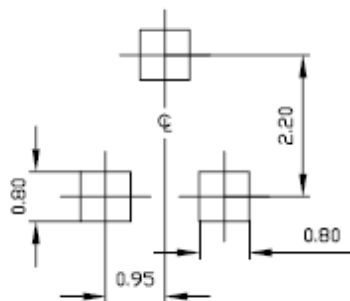


Packaging Information

SOT-23 STANDARD PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



UNIT: mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.75	—	1.17	0.030	—	0.046
A1	0.05	—	0.15	0.002	—	0.006
A2	0.70	0.85	1.02	0.028	0.033	0.040
b	0.30	—	0.50	0.012	—	0.020
c	0.08	—	0.20	0.003	—	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	2.10	—	2.64	0.083	—	0.104
E1	1.20	1.30	1.40	0.047	0.051	0.055
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.40	0.50	0.60	0.016	0.020	0.024
L1	0.54 REF			0.021 REF		
L2	0.25			0.010		
θ1	0°	—	8°	0°	—	8°