

LPM9017 - -30V/4A

P-Channel Enhancement Mode Field Effect Transistor

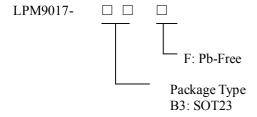
General Description

The LPM9017 is the P-channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application, notebook computer power management and other battery powered circuits where high-side switching.

Ordering Information



Features

- -30V/-4A,RDS(ON) $<58\text{m}\Omega$ (typ.)@VGS=-10V
- -30V/-3.0A,RDS(ON) $<68m\Omega(typ.)$ @VGS=-4.5V
- Super high density cell design for extremely low RDS(ON)
- SOT23 Package

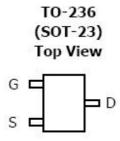
Applications

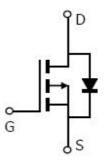
- ♦ Portable Media Players
- ♦ Cellular and Smart mobile phone
- ♦ LCD
- ♦ DSC Sensor
- ♦ Wireless Card

Marking Information

Please see website.

Pin Configurations





SOT23L(Top View)



Functional Pin Description

Absolute Maximum	Ratings TA=25°C unles	s otherwise noted			
Parameter		Symbol Maximum		Units	
Drain-Source Voltage		V _{DS}	-30	V	
Gate-Source Voltage		V _{GS}	±20	V	
Continuous Drain	T _A =25°C		-4.1		
Current	T _A =70°C		-3.5	A	
Pulsed Drain Current ^c		I _{DM}	-25		
Power Dissipation ^B	T _A =25°C	D	1.4	10/	
	T _A =70°C	P _D	0.9	W	
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C	

Thermal Characteristics						
Parameter		Symbol	Тур	Max	Units	
Maximum Junction-to-Ambient A	t ≤ 10s	В	70	90	°C/W	
Maximum Junction-to-Ambient AD	Steady-State	R _{eJA}	100	125	°C/W	
Maximum Junction-to-Lead	Steady-State	R _{eJL}	63	80	°C/W	



Preliminary Datasheet

LPM9017

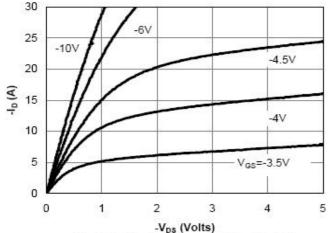
Symbol	Parameter	Condition	Min	Тур	Max	Unit	
Static Param	eters	•					
V(BR)DSS	Drain-Source Breakdown Voltage	Vas=0V,In=-250µA	-20			V	
VGS(th)	Gate Threshold Voltage	Vos=Vos,lo=-250µA	-0.6		-1.2	V	
Igss	Gate Leakage Current	V _{D8} =0V,V _{G8} =±12V			±100	nΑ	
	Zero Gate Voltage Drain	Vps=-24V,Vgs=0V			-1		
loss	Current	Vos=-24V,Vos=0V TJ=55°C			-10	μΑ	
Ros(on)	Drain-source On-Resistance	V _{BS} =-10V,I _D =-4.0A V _{BS} =-4.5V,I _D =-3.0A V _{BS} =-2.5V,I _D =-2.0A		55 64 85	58 68 95	mΩ	
Gris	Forward Transconductance	Vps=-5V,lp=-4.0A		10		S	
Source-Drain	n Doide	•					
Vso	Diode Forward Voltage	Is=-1.0A,V ₉₈ =0V		-0.7	-1.0	V	
Dynamic Par	rameters	•					
Q ₀	Total Gate Charge	Vns=-15V		7			
Qgs	Gate-Source Charge	Vas=-10V		13		nC	
Q _{gd}	Gate-Drain Charge	I _D ≡-4.0A		1.8			
Ciss	Input Capacitance	Vps=-15V		680			
Coss	Output Capacitance	Vgs=0V		320		pF	
Crss	Reverse Transfer Capacitance	f=1MHz		65		1	
td(an)		Vpp=-15V		12	18		
tr	Turn-On Time	RL=15Ω		3	7	_	
ta(off)	T 0//T	ID=-1A Vgen=-10V		34	42	nS	
t _f	Turn-Off Time	Rg=8Ω		3	7		
			+	-	-		

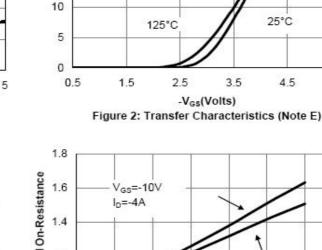
25°C

5.5



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





30

25

20

15

V_{DS}=-5V

Fig 1: On-Region Characteristics (Note E)

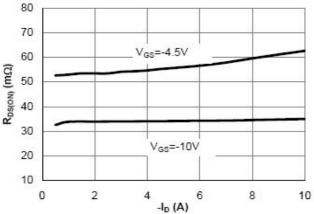
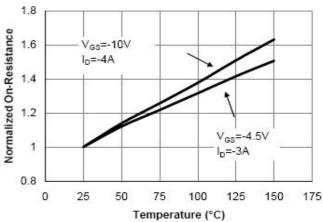


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)



125°C

2.5

-V_{GS}(Volts)

3.5

Figure 4: On-Resistance vs. Junction Temperature (Note E)

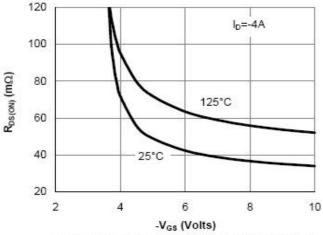


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

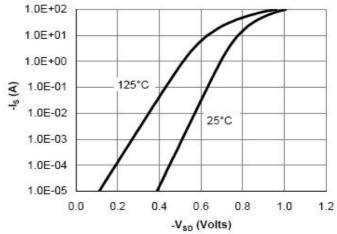


Figure 6: Body-Diode Characteristics (Note E)



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

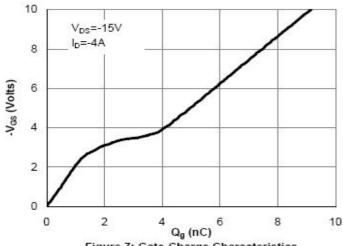


Figure 7: Gate-Charge Characteristics

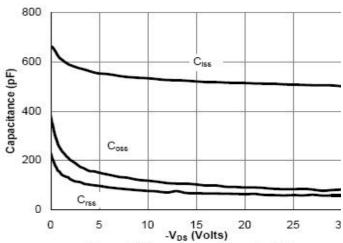


Figure 8: Capacitance Characteristics

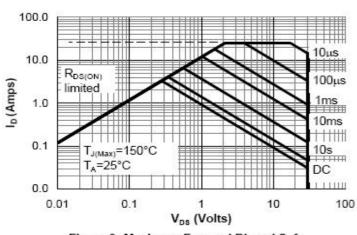


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

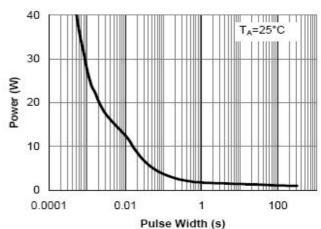


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

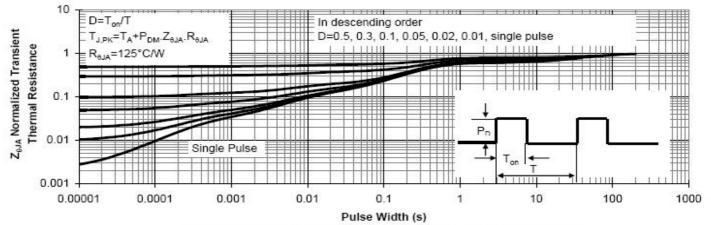
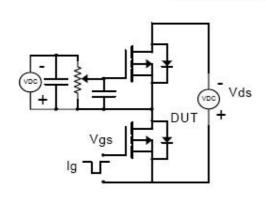
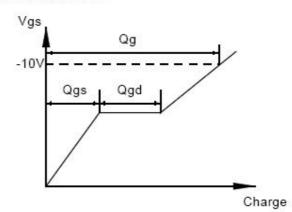


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

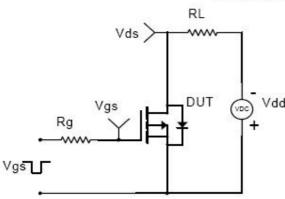


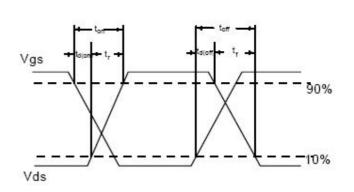
Gate Charge Test Circuit & Waveform



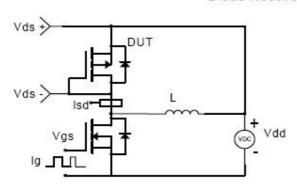


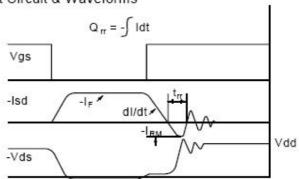
Resistive Switching Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms

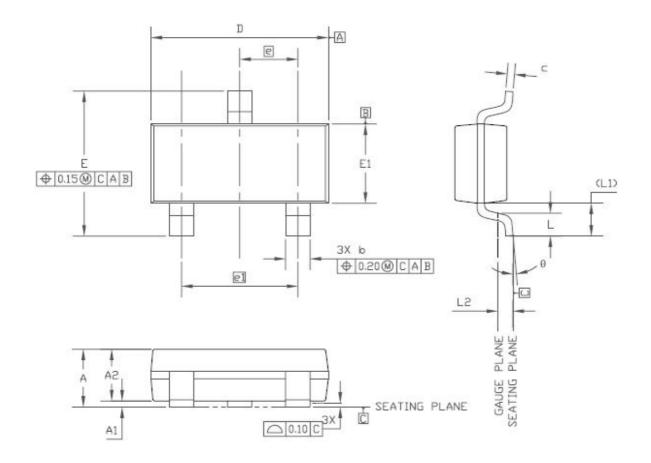




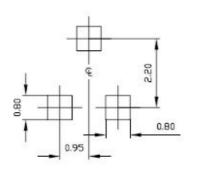


Packaging Information

SOT-23 STANDARD PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



UNIT:	mm

eva more	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES			
SYMBOLS	MIN	NOM	MAX	MIN	NOM	MAX	
A	0.75		1.17	0.030		0.046	
A1	0.05	1	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	2.64	0.083	1000	0.104	
E1	1.20	1.30	1.40	0.047	0.051	0.055	
e	17000000	0.95 BSC			0.037 BSC		
el	1.90 BSC			0.075 BSC			
L	0.40	0.50	0.60	0.016	0.020	0.024	
L1	0.54 REF			0.021REF			
L2	0.25			0.010			
01	00		80	00		80	