LM20550NLI3A

Leadpower Semiconductor

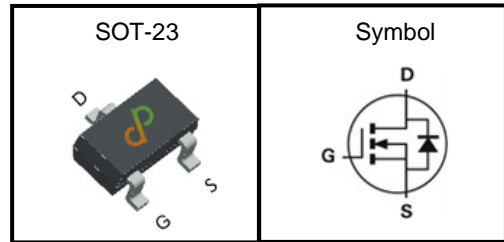## N-Channel Enhancement Mode MOSFET Preliminary Datasheet

Feature

- Lower Q_g and Q_{gd} for high-speed switching
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered systems.

Pin Description

SOT-23	Symbol

V_{DSS}	20	V
$R_{DS(ON)\text{-}Max}$	40	mΩ
I_D	4.6	A

Absolute Maximum Ratings (T$_J$=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	1	A
I_{DM}[1]	Pulse Drain Current Tested	T_A=25°C	10	A
I_D[2]	Continuous Drain Current	T_A=25°C	4.3	A
		T_A=100°C	2.7	
P_D[2]	Maximum Power Dissipation	T_A=25°C	1.4	W
		T_A=100°C	0.6	

Thermal Characteristics

Symbol	Parameter		Rating	Unit
$R_{\theta JA}$[2]	Thermal Resistance-Junction to Ambient	Steady State	90	°C/W

Note ① : Max. current is limited by junction temperature.
Note ② : Surface Mounted on 1in^2 FR-4 board with 1oz.

Electrical Characteristics (T$_J$=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=250µA	20	-	-	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=16V, V$_{GS}$=0V	-	-	1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250uA	0.35	0.6	1.0	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±12V, V$_{DS}$=0V	-	-	±100	nA
R$_{DS(ON)}$[3]	Drain-Source On-state Resistance	V$_{GS}$=4.5V, I$_D$=3.6A	-	29	40	mΩ
		V$_{GS}$=2.5V, I$_D$=3.1A	-	39	55	
gfs	Forward Transconductance	V$_{DS}$=5V, I$_D$=3.6A	-	5	-	S
Dynamic Characteristics[4]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=10V, Freq.=1MHz	-	440	-	pF
C$_{oss}$	Output Capacitance		-	61	-	
C$_{rss}$	Reverse Transfer Capacitance		-	59	-	
t$_{d(ON)}$	Turn-on Delay Time	V$_{DD}$=10V, I$_D$=1A, V$_{GS}$=5V, R$_{GEN}$=6Ω	-	4.5	-	nS
t$_r$	Turn-on Rise Time		-	7.4	-	
t$_{d(OFF)}$	Turn-off Delay Time		-	19	-	
t$_f$	Turn-off Fall Time		-	7.2	-	
Q$_g$	Total Gate Charge	V$_{DS}$=10V, V$_{GS}$=4.5V, I$_D$=3.6A	-	4.4	-	nC
Q$_{gs}$	Gate-Source Charge		-	0.7	-	
Q$_{gd}$	Gate-Drain Charge		-	1.7	-	
Source-Drain Characteristics						
V$_{SD}$[3]	Diode Forward Voltage	I$_S$=3.6A, V$_{GS}$=0V	-	0.75	1.1	V
t$_{rr}$	Reverse Recovery Time	I$_F$=3.6A, V$_{GS}$=0, dI$_F$/dt=100A/us	-	18.2	-	nS
Q$_{rr}$	Reverse Recovery Charge		-	9.2	-	nC

Note ④：Pulse test (pulse width≤300us, duty cycle≤2%).
Note ⑤：Guaranteed by design, not subject to production testing.