



Power MOSFETS

DATASHEET

LM60J90DEF6A

Dual N-Channel
Enhancement Mode MOSFET

 Leadpower-semiconductor Corp., Ltd

 sales@leadpower-semi.com

 (03) 6577339 FAX : (03) 6577229

 www.leadpower-semi.com

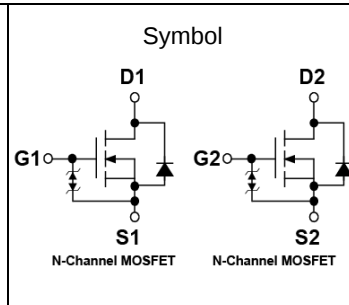
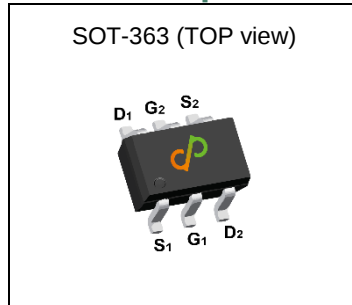


Quality Management Systems

ISO 9001:2015 Certificate

Dual N-Channel Enhancement Mode MOSFET

Pin Description



Ordering Information

Symbol	Dual N-Channel	Unit
V_{DSS}	60	V
$R_{DS(ON)-Max}$	1.9	Ω
I_D	0.26	A

Feature

- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- ESD Protection

Applications

- Power Management in DC/DC Converters
- Load Switch

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM60J90DEF6A	SOT-363	Tape & Reel	3000 / Tape & Reel	4□□□

Note : □□□ = Lot Code

Absolute Maximum Ratings (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter		Dual N-Channel	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
$I_{DM}^{①}$	Pulse Drain Current Tested	$T_A=25^{\circ}C$	0.64	A
$I_D^{①}$	Continuous Drain Current	$T_A=25^{\circ}C$	0.26	A
		$T_A=70^{\circ}C$	0.2	
P_D	Maximum Power Dissipation	$T_A=25^{\circ}C$	0.25	W
		$T_A=70^{\circ}C$	0.16	

Thermal Characteristics

Symbol	Parameter		Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	Steady State	500	°C/W

Note ① : Max. current is limited by Bonding wire

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C

Note ③ : Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

Dual N-Channel 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 _{DS} =250uA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V	-	-	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	1	1.6	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±10	uA
R _{DS(ON)} ④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =0.3A	-	1.6	1.9	Ω
		V _{GS} =4.5V, I _{DS} =0.2A	-	1.7	2.2	
gfs	Forward Transconductance	V _{DS} =10V, I _{DS} =0.15A	-	0.45	-	S
Dynamic Characteristics ⑥						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Freq.=1MHz	-	26.1	-	pF
C _{oss}	Output Capacitance		-	2.7	-	
C _{rss}	Reverse Transfer Capacitance		-	1.7	-	
td(ON)	Turn-on Delay Time	V _{GS} =10V, V _{DS} =30V, I _D =0.3A, R _{GEN} =10Ω	-	1	-	nS
t _r	Turn-on Rise Time		-	19.3	-	
t _{d(OFF)}	Turn-off Delay Time		-	23.2	-	
t _f	Turn-off Fall Time		-	21	-	
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =30V I _D =1A	-	0.9	-	nC
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =1A	-	1.7	-	
Q _{gs}	Gate-Source Charge		-	0.4	-	
Q _{gd}	Gate-Drain Charge		-	0.3	-	
Source-Drain Characteristics						
V _{SD} ④	Diode Forward Voltage	I _{SD} =0.15A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _F =0.1A, V _R =0V	-	7.4	-	nS
Q _{rr}	Reverse Recovery Charge	dI _F /dt=100A/μs	-	2.3	-	nC

Note ④ : Pulse test (pulse width 300us, duty cycle 2%).

Note ⑤ : Guaranteed by design, not subject to production testing

N-Channel Typical Characteristics

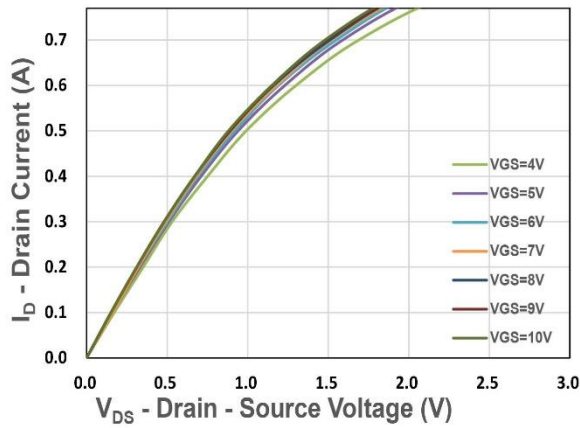


Figure 1. Output Characteristics

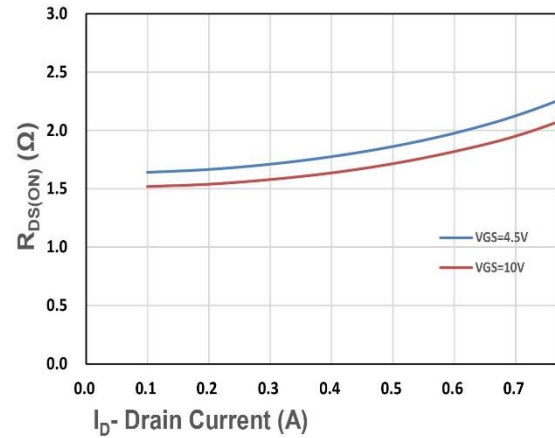


Figure 2. On-Resistance vs. I_D

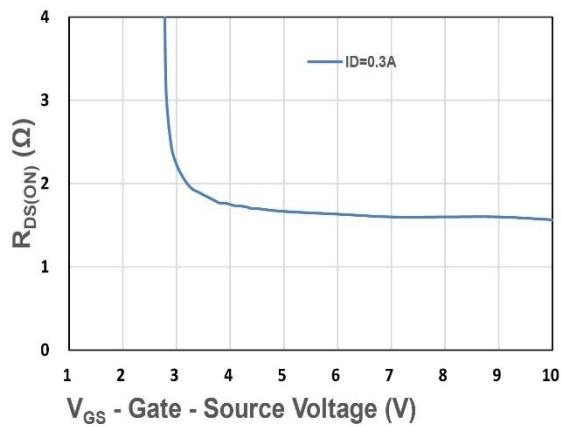


Figure 3. On-Resistance vs. V_{GS}

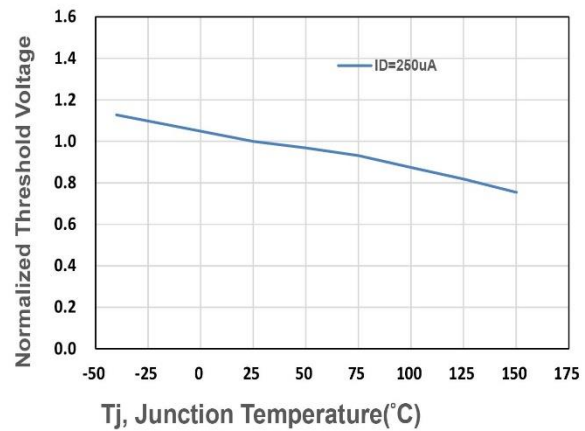


Figure 4. Gate Threshold Voltage

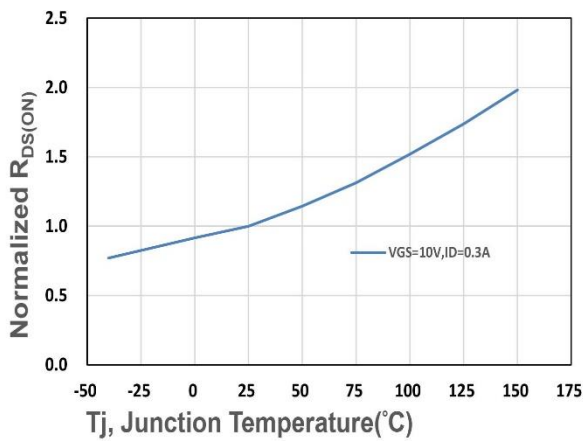


Figure 5. Drain-Source On Resistance

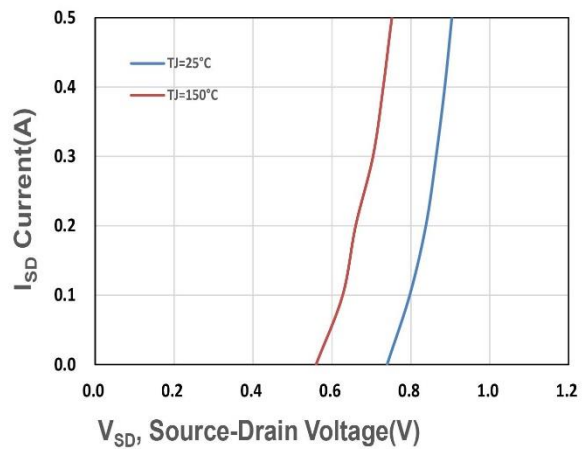


Figure 6. Source-Drain Diode Forward

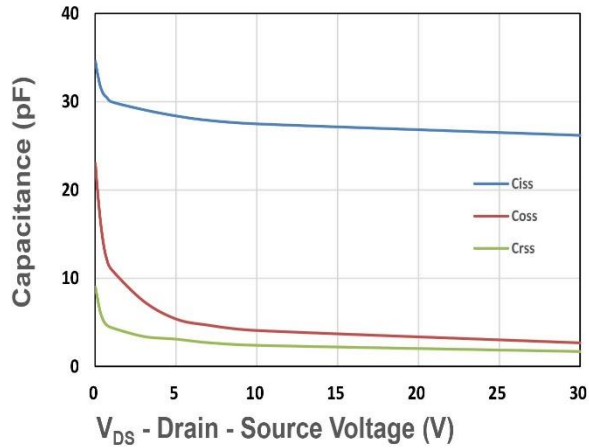


Figure 7. Capacitance

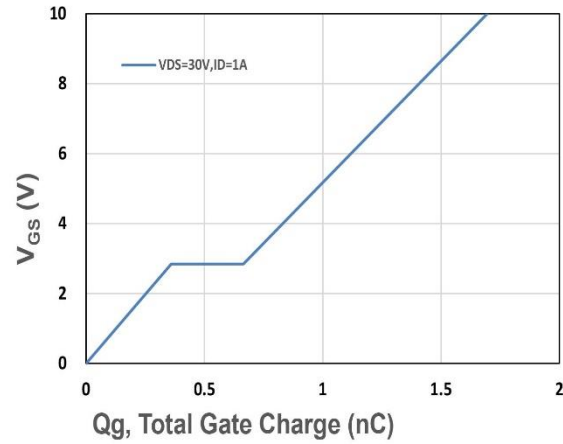


Figure 8. Gate Charge Characteristics

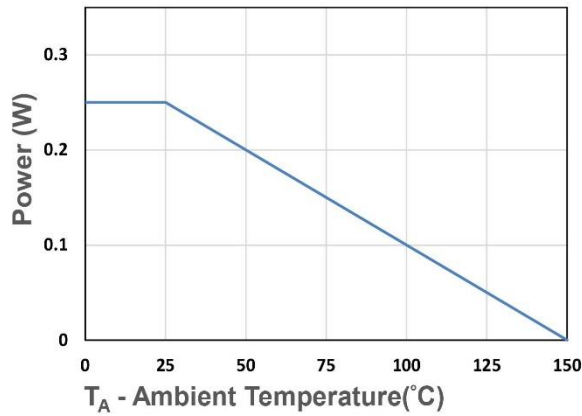


Figure 9. Power Dissipation

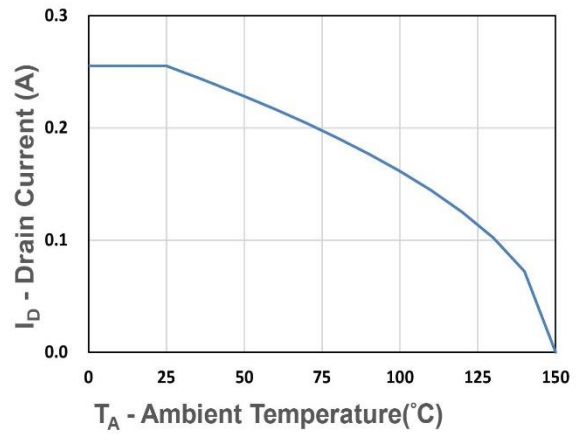


Figure 10. Drain Current

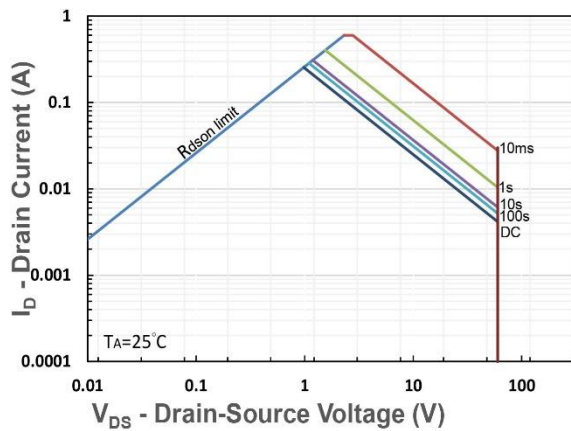


Figure 11. Safe Operating Area

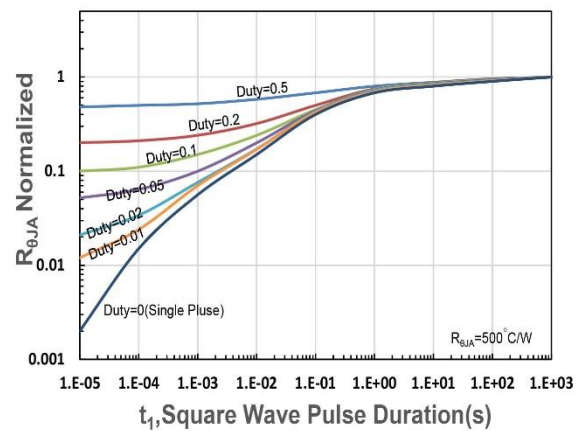


Figure 12. $R_{\theta JA}$ Transient Thermal Impedance