



Power MOSFETS

DATASHEET

LM30190DAQ8A

Dual N-Channel
Enhancement Mode MOSFET

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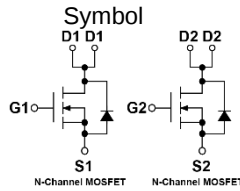
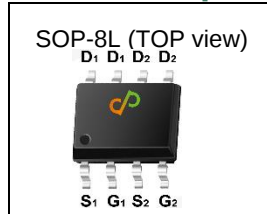


Quality Management Systems

ISO 9001:2015 Certificate

Dual N-Channel Enhancement Mode MOSFET

Pin Description



Ordering Information

Symbol	Dual N-Channel	Unit
V_{DSS}	30	V
$R_{DS(ON)-Max}$	19	mΩ
I_D	6	A

Feature

- Dual N Channel MOSFET
- Fast switching speed
- ROHS Compliant & Halogen-Free
- Reliable and Rugged
- 100% UIS Tested

Applications

- DC-DC Converters
- Portable equipment application

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM30190DAQ8A	SOP-8	Tape & Reel	3000 / Tape & Reel	30190 □□□□□

Note : □□□□□ = Lot Code

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

Symbol	Parameter		Dual N-Channel	Unit
V_{DSS}	Drain-Source Voltage		30	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	$T_A=25^{\circ}C$	15	A
I_D	Continuous Drain Current	$T_A=25^{\circ}C$	6	A
		$T_A=70^{\circ}C$	4.8	
P_D	Maximum Power Dissipation	$T_A=25^{\circ}C$	1.1	W
		$T_A=70^{\circ}C$	0.7	
$I_{AS}^{②}$	Avalanche Current, Single pulse	L=0.1mH	14	A
$E_{AS}^{②}$	Avalanche Energy, Single pulse	L=0.1mH	10	mJ

Thermal Characteristics

Symbol	Parameter		Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	t≤10s	62.5	°C/W
		Steady State	110	°C/W

Note ① : Max. current is limited by junction temperature.

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

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

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	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	1	1.5	2	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =10A	-	16	19	mΩ
		V _{GS} =4.5V, I _{DS} =5A	-	20	26	
gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =5A	-	8	-	S
Dynamic Characteristics ⑤						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V, Freq.=1MHz	-	3.3	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Freq.=1MHz	-	500	-	pF
C _{oss}	Output Capacitance		-	62	-	
C _{rss}	Reverse Transfer Capacitance		-	53	-	
td(ON)	Turn-on Delay Time	V _{GS} =10V,V _{DS} =15V, Id=1A,RGEN=6Ω	-	3.2	-	nS
tr	Turn-on Rise Time		-	21.6	-	
td(OFF)	Turn-off Delay Time		-	25	-	
tf	Turn-off Fall Time		-	18.2	-	
Qg	Total Gate Charge	V _{GS} =4.5V,V _{DS} =15V Id=10A	-	8.5	-	nC
Qg	Total Gate Charge	V _{GS} =10V,V _{DS} =15V, Id=10A	-	15.4	-	
Qgs	Gate-Source Charge		-	1.3	-	
Qgd	Gate-Drain Charge		-	4.8	-	
Source-Drain Characteristics						
VSD④	Diode Forward Voltage	ISD=5A, VGS=0V	-	0.7	1.1	V
trr	Reverse Recovery Time	IF=5A, VR=15V	-	9	-	nS
Qrr	Reverse Recovery Charge	dIF/dt=100A/μs	-	3	-	nC

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

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

Dual N-Channel Typical Characteristics

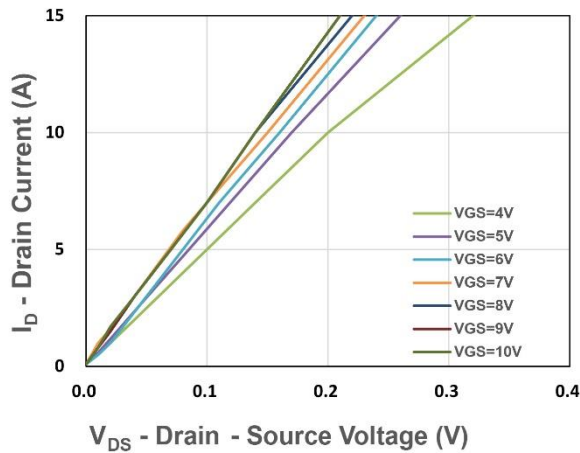


Figure 1. Output Characteristics

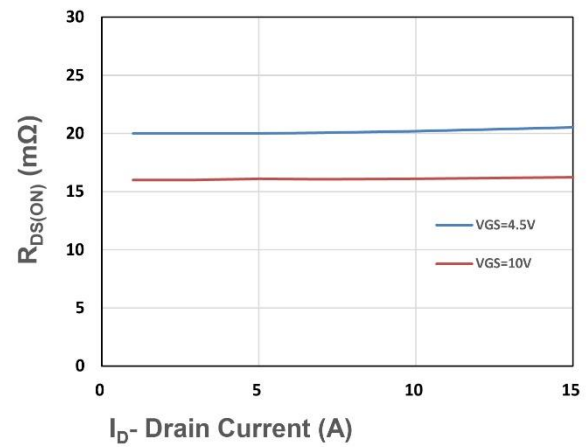


Figure 2. On-Resistance vs. ID

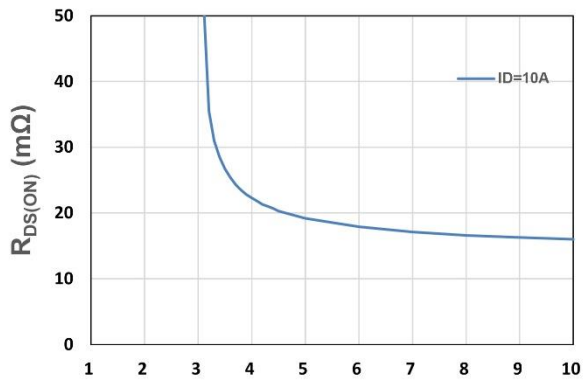


Figure 3. On-Resistance vs. VGS

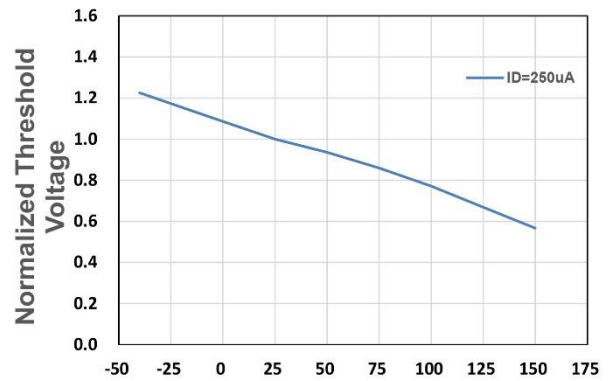


Figure 4. Gate Threshold Voltage

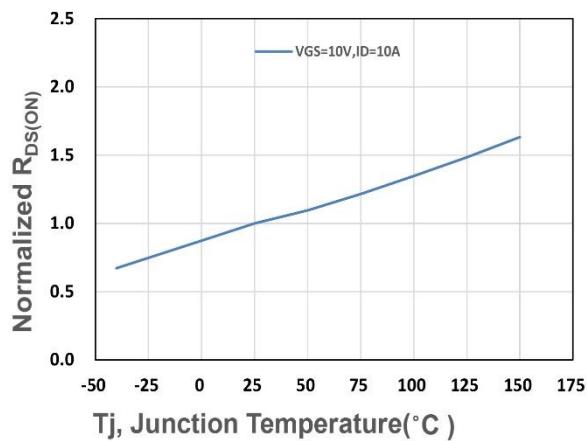


Figure 5. Drain-Source On Resistance

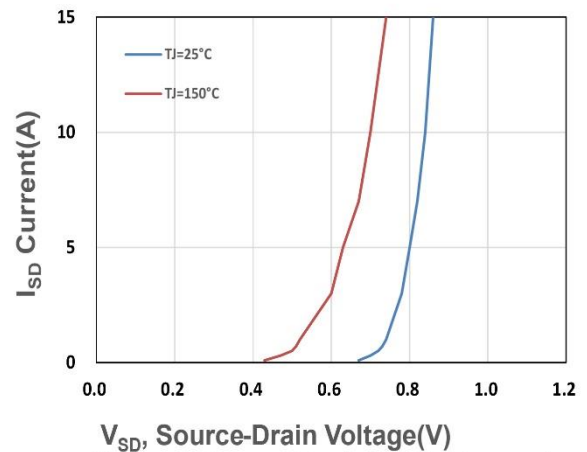
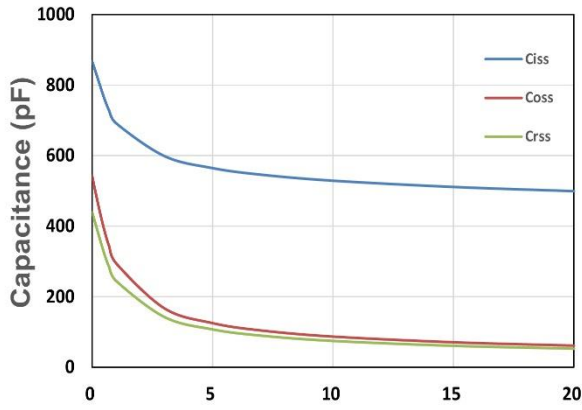
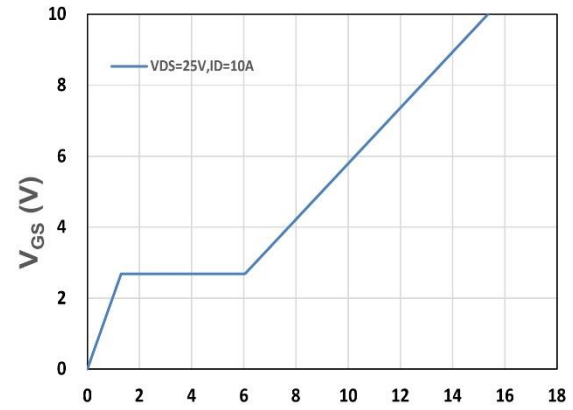


Figure 6. Source-Drain Diode Forward



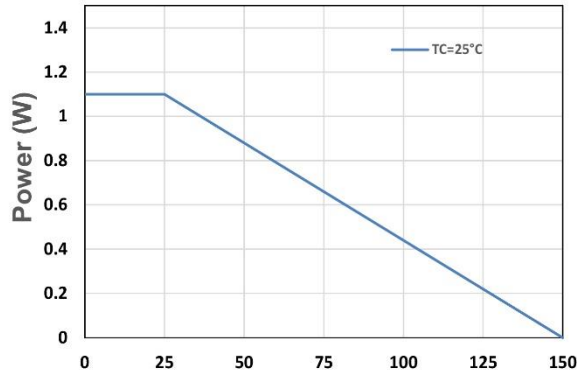
V_{DS} - Drain - Source Voltage (V)

Figure 7. Capacitance



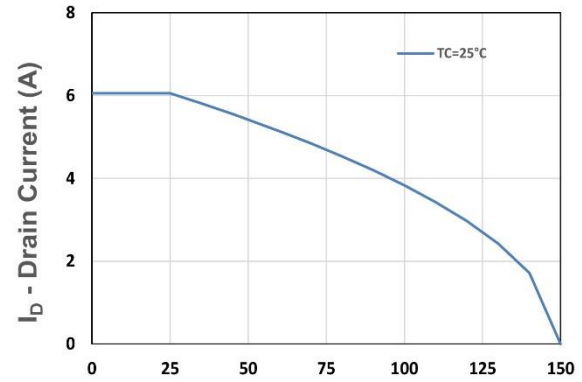
Qg , Total Gate Charge (nC)

Figure 8. Gate Charge Characteristics



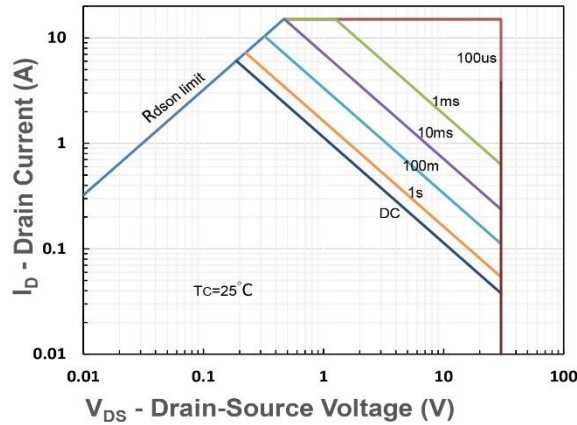
T_j - Junction Temperature (°C)

Figure 9. Power Dissipation



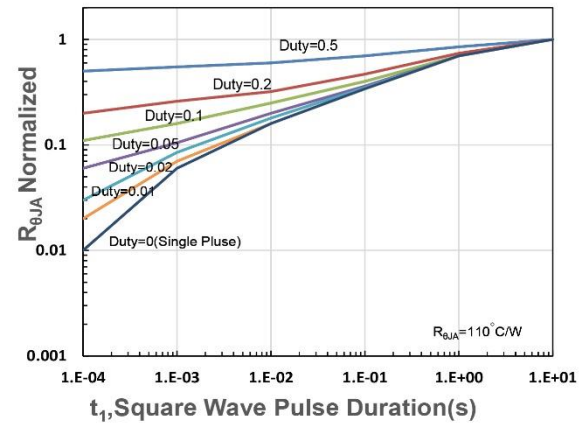
T_j - Junction Temperature (°C)

Figure 10. Drain Current



V_{DS} - Drain-Source Voltage (V)

Figure 11. Safe Operating Area



$R_{\theta JA}$ Transient Thermal Impedance