N-Channel Enhancement Mode Power MOSFET

Description

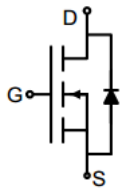
The 06N06L uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

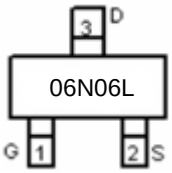
- V_{DS} 60V
- I_D (at V_{GS} = 10V) 5.5A
- $R_{DS(ON)}$ (at V_{GS} = 4.5V) < 80mΩ
- $R_{DS(ON)}$ (at V_{GS} = 10V) < 60mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters



Schematic diagram



Marking and pin assignment

SOT-23-3L

Device	Package	Marking	Packaging
06N06L	SOT-23-3L	06N06L	3000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Continuous Drain Current	I_D	5.5	A
Pulsed Drain Current (note1)	I_{DM}	15	A
Gate-Source Voltage	V_{GS}	±20	V
Power Dissipation	P_D	1.8	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	69.4	ºC/W

Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.1	1.8	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3A	--	45	60	mΩ
		V_{GS} = 4.5V, I_D = 3A	--	52	80	
Forward Transconductance	g_{FS}	V_{DS}=15V,I_D=2A	3	--	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 20V, f = 1.0MHz	--	516	--	pF
Output Capacitance	C_{oss}		--	82	--	
Reverse Transfer Capacitance	C_{rss}		--	43	--	
Total Gate Charge	Q_g	V_{DS} = 20V, I_D = 5A, V_{GS} = 10V	--	8.9	--	nC
Gate-Source Charge	Q_{gs}		--	2.4	--	
Gate-Drain Charge	Q_{gd}		--	1.4	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 15V, R_G = 3Ω R_L = 2.5Ω	--	4.5	--	ns
Turn-on Rise Time	t_r		--	2.5	--	
Turn-off Delay Time	$t_{d(off)}$		--	14.5	--	
Turn-off Fall Time	t_f		--	3.5	--	
Drain-Source Body Diode Characteristics						
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 5A, V_{GS} = 0V	--	0.9	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

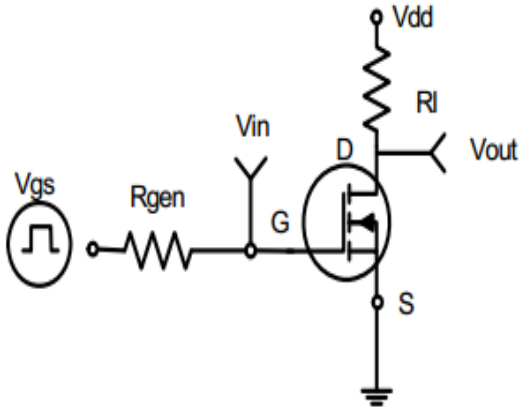


Figure 1:Switching Test Circuit

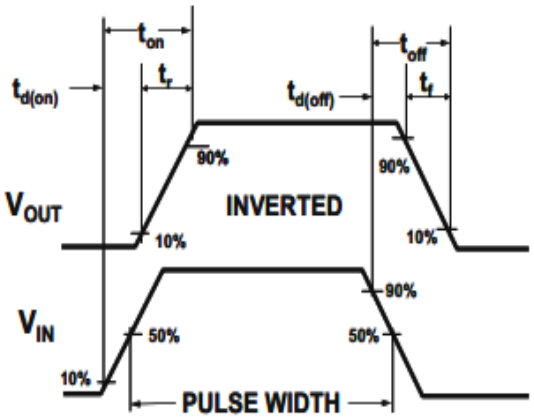
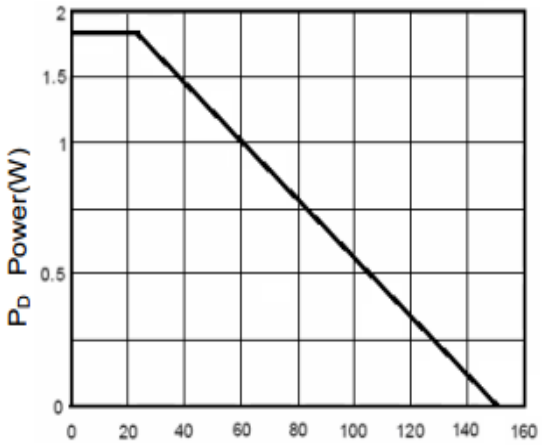
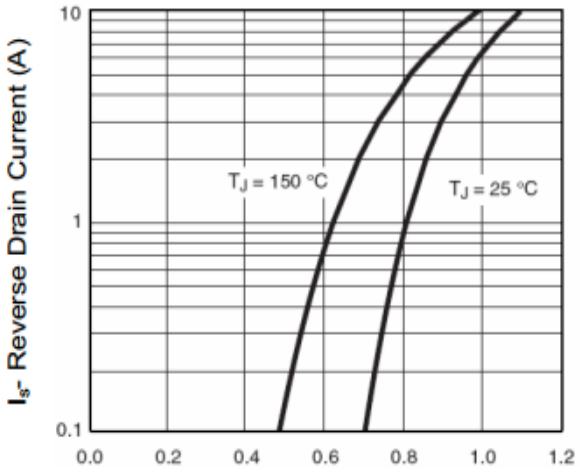


Figure 2:Switching Waveforms



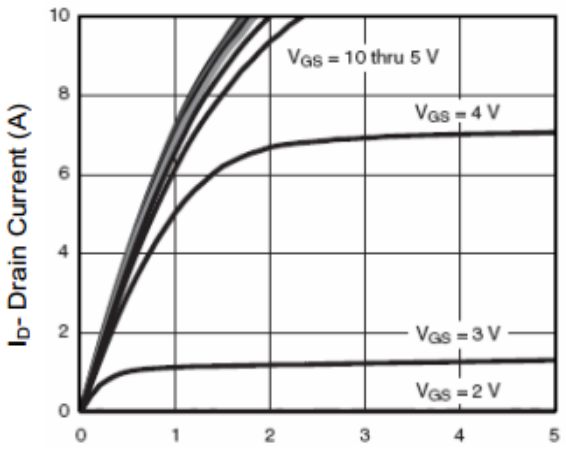
T_J-Junction Temperature(℃)

Figure 3 Power Dissipation



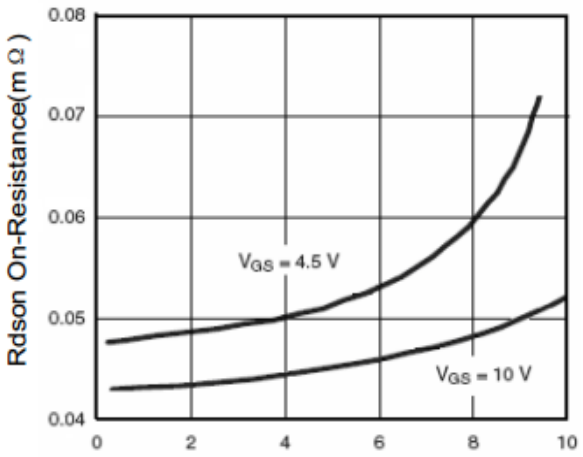
Vsd Source-Drain Voltage (V)

Figure 2 Source- Drain Diode Forward



Vds Drain-Source Voltage (V)

Figure 5 Output Characteristics



I_D- Drain Current (A)

Figure 6 Drain-Source On-Resistance

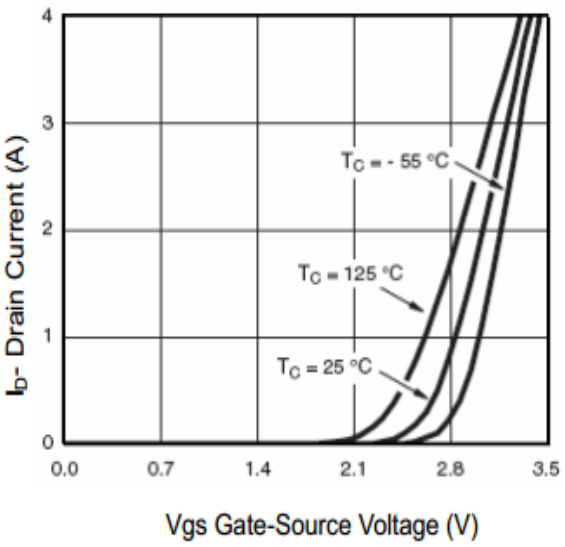


Figure 7 Transfer Characteristics

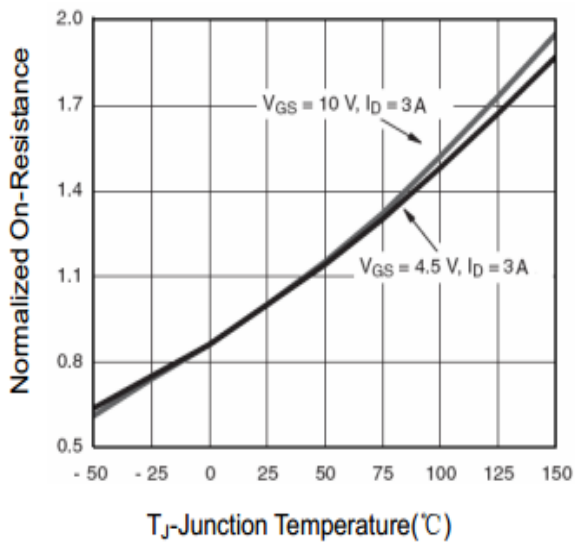


Figure 8 Drain-Source On-Resistance

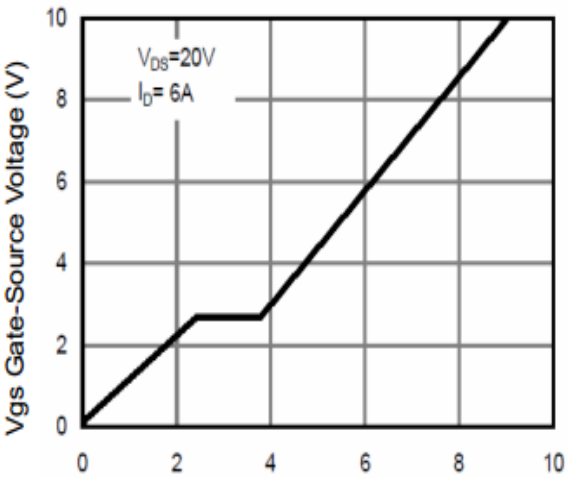


Figure 9 Gate Charge

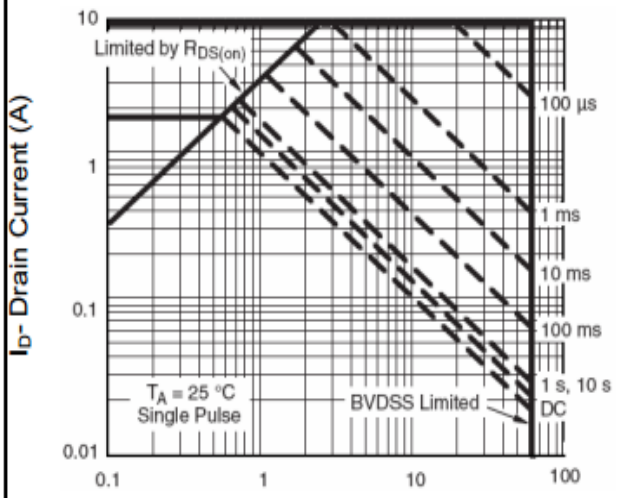


Figure 10 Safe Operation Area

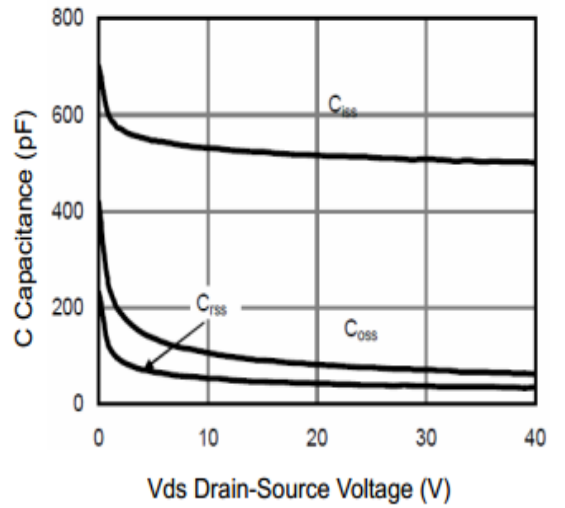
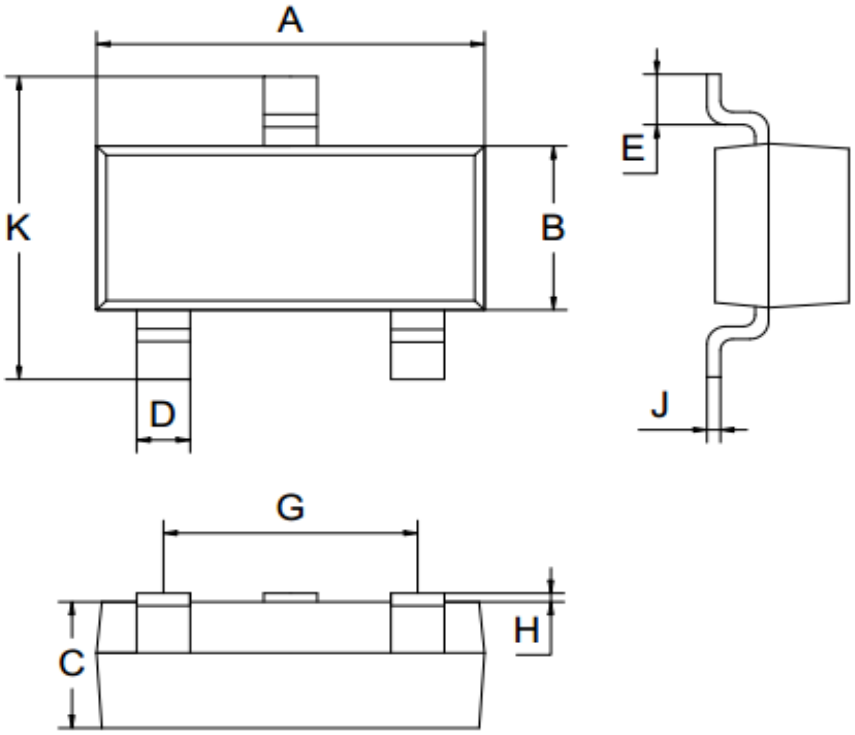


Figure 11 Capacitance vs Vds

SOT-23-3L Package information



SOT-23-3L			
Dim	MIN	NOM	MAX
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G		1.90	
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00
All Dimensions in mm			