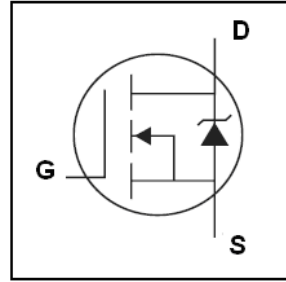


Features

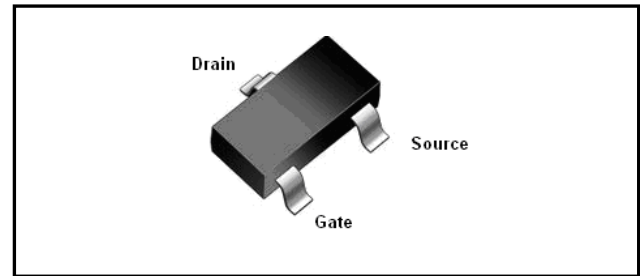
- ◆ Low On-Resistance
- ◆ Fast Switching
- ◆ High Effective
- ◆ Lead-Free, RoHS Compliant

Description

SL03N06 designed by the trench processing techniques to achieve extremely low on-resistance. Additional features of this design are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating . These features combine to make this design an extremely efficient and reliable device for use in Switch applications and a wide variety of other small power supply applications.



V_{DSS}	60V
$R_{DS(on)}$	95mΩ
I_D	3A


Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (T_A) is 25°C, unless otherwise specified.

Symbol	Parameter	Rating	Unit
Common Ratings ($T_c=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{GS}	Gate-Source Voltage	±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60	V
T_J	Maximum Junction Temperature	175	°C
T_{STG}	Storage Temperature Range	-55 to 155	°C
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$ 3	A
Mounted on Large Heat Sink			
I_{DM}	Pulse Drain Current Tested ①	$T_C = 25^\circ\text{C}$ 12	A
I_D	Continuous Drain current@ $V_{GS}=4.5\text{V}$ ②	$T_C = 25^\circ\text{C}$ 3	A
P_D	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$ 1.75	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	155	°C/W

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(Tc=25°C)	V _{DS} =60V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	V _{DS} =60V, V _{GS} =0V	--	--	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.8	1.1	1.5	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =2A	--	95	105	mΩ
g _{fs}	Forward Transconductance	V _{DS} = 15V, I _D =1.8A	3	--	--	S
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	250	--	pF
C _{oss}	Output Capacitance		--	35	--	pF
C _{rss}	Reverse Transfer Capacitance		--	20	--	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =1A, V _{GS} =4.5V	--	6	--	nC
Q _{gs}	Gate-Source Charge		--	1.2	--	nC
Q _{gd}	Gate-Drain Charge		--	1.3	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V, I _D =1A, R _G =6.8Ω, V _{GS} =4.5V	--	6	--	nS
t _r	Turn-on Rise Time		--	15	--	nS
t _{d(off)}	Turn-Off Delay Time		--	16	--	nS
t _f	Turn-Off Fall Time		--	10	--	nS
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I _{SD}	Source-drain current(Body Diode) ②	T _c =25°C	--	--	3	A
V _{SD}	Forward on voltage	I _{SD} =3A, V _{GS} =0V	--	--	1.2	V

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Pulse width ≤ 300μs; duty cycles ≤ 2%.

Typical Characteristics

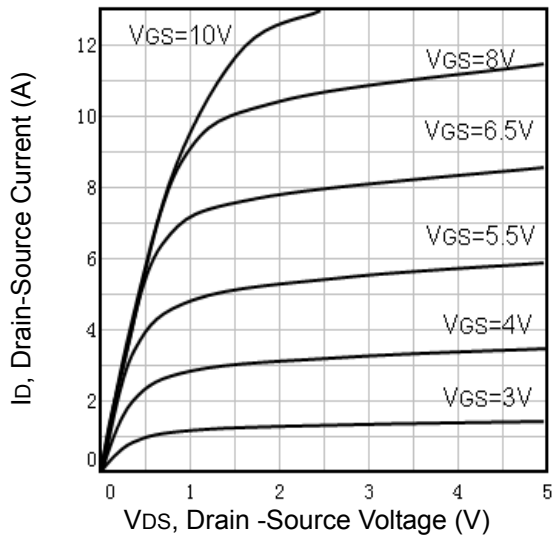


Fig1. Typical Output Characteristics

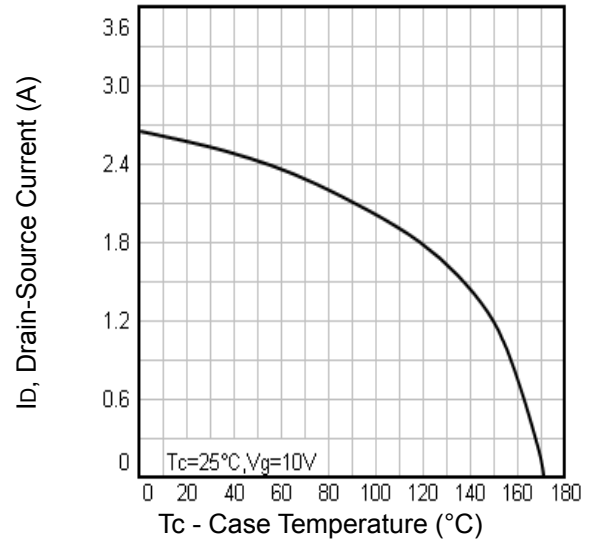


Fig2. Maximum Drain Current Vs. Case Temperature

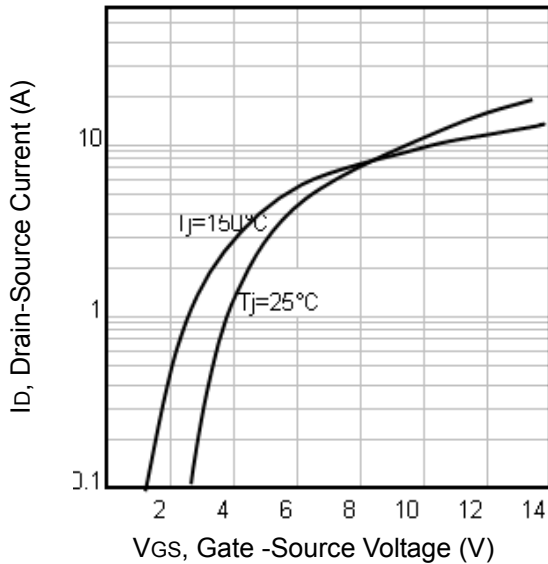


Fig3. Typical Transfer Characteristics

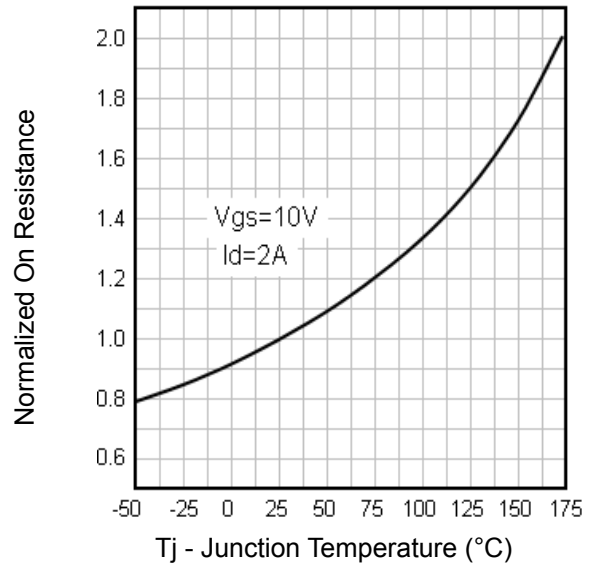


Fig4. Normalized On-Resistance Vs. Temperature

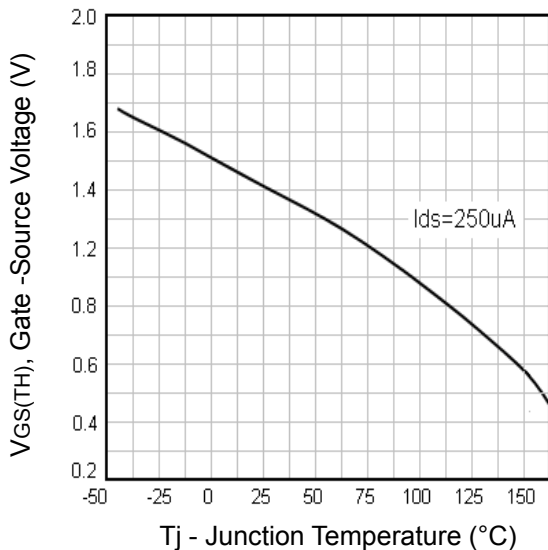


Fig9. Threshold Voltage Vs. Temperature

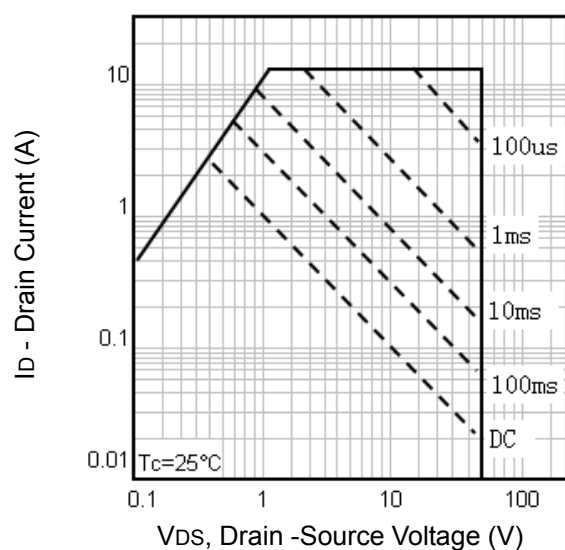


Fig6. Maximum Safe Operating Area

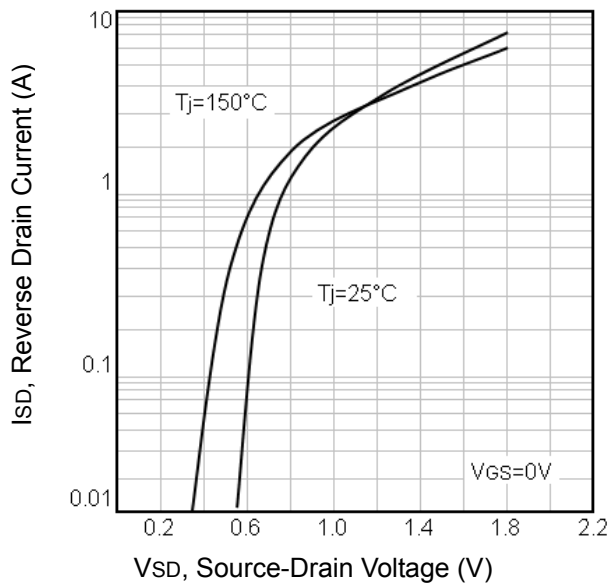


Fig7. Typical Source-Drain Diode Forward Voltage

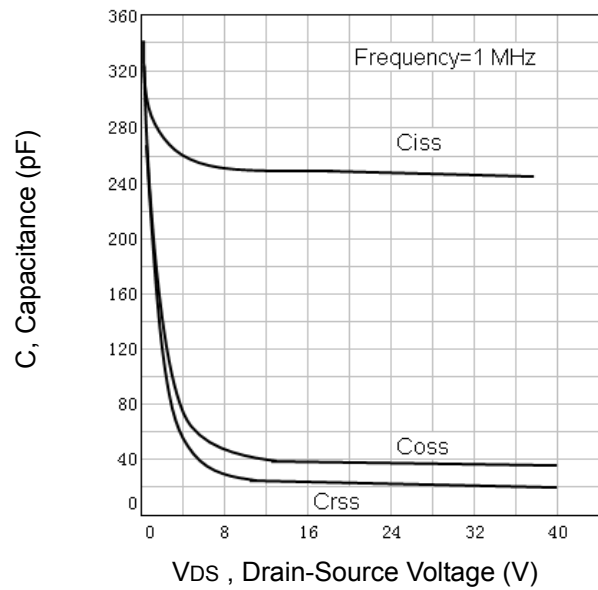
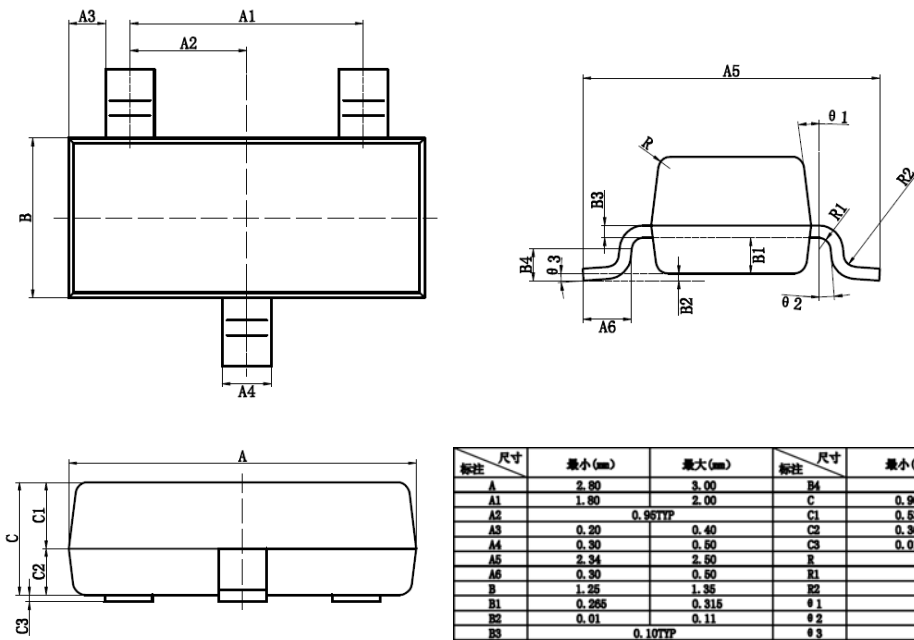


Fig8. Typical Capacitance Vs.Drain-Source Voltage

SOT23 Mechanical Data



Order Information

Product	Marking	Package	Packaging	Min Unit Quantity
SL03N06	V36A	SOT23	3000/Reel	6000