

Description

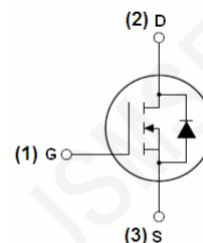
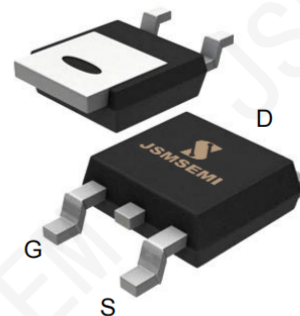
The JSM100N06D uses advanced SGT technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

- $V_{DS} = 60V, I_D = 100A$
 $R_{DS(ON)} < 6.0m\Omega @ V_{GS} = 10V (Typ: 4.5m\Omega)$
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity
- Excellent package for good heat dissipation

Application

- Power switching application
- Power management
- Uninterruptible power supply



Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	100	A
Drain Current-Continuous($T_C = 100^\circ C$)	$I_D (100^\circ C)$	51	A
Pulsed Drain Current	I_{DM}	320	A
Maximum Power Dissipation	P_D	78	W
Derating factor		0.63	W/ $^\circ C$
Single pulse avalanche energy (Note 5)	E_{AS}	341	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Thermal Resistance, Junction-to-Case (Note 2)	$R_{\theta JC}$	1.6	$^\circ C/W$
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Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{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-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =30A	-	4.5	6.0	mΩ
		V _{GS} =4.5V, I _D =20A		6.0	7.5	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =10A	20	-	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, F=1.0MHz	-	2300	-	PF
Output Capacitance	C _{oss}		-	245	-	PF
Reverse Transfer Capacitance	C _{rss}		-	210	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =20A V _{GS} =10V, R _{GEN} =3Ω	-	8	-	nS
Turn-on Rise Time	t _r		-	7	-	nS
Turn-Off Delay Time	t _{d(off)}		-	35	-	nS
Turn-Off Fall Time	t _f		-	13	-	nS
Total Gate Charge	Q _g	V _{DS} =30V, I _D =20A, V _{GS} =10V	-	61	-	nC
Gate-Source Charge	Q _{gs}		-	16	-	nC
Gate-Drain Charge	Q _{gd}		-	20	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =10A	-	0.8	1.1	V
Diode Forward Current ^(Note 2)	I _S		-	-	80	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 20A di/dt = 100A/μs ^(Note3)	-	30	-	nS
Reverse Recovery Charge	Q _{rr}		-	38	-	nC

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
5. EAS condition: T_J=25°C, V_{DD}=35V, V_G=10V, L=0.5mH, R_g=25Ω

Typical Electrical and Thermal Characteristics (Curves)

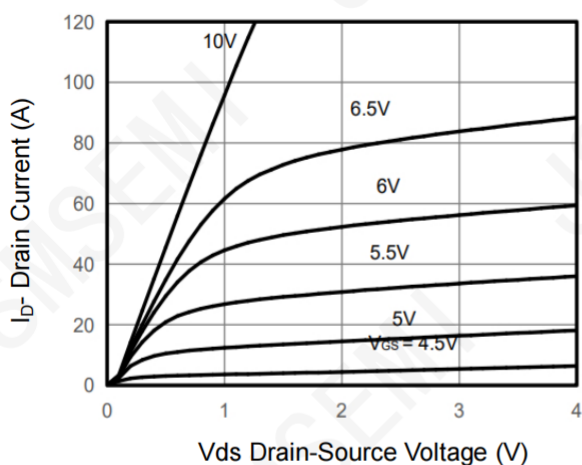


Figure 1 Output Characteristics

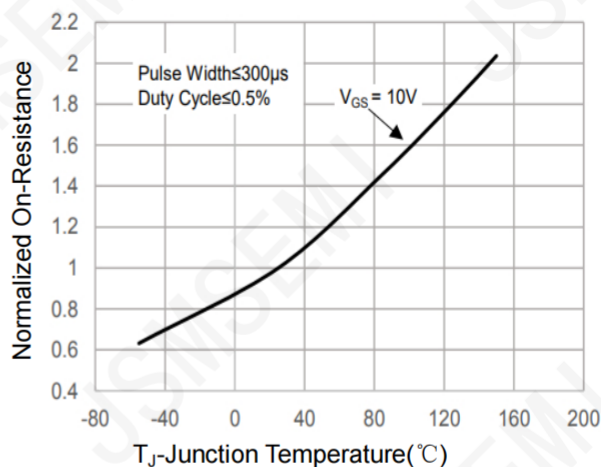


Figure 4 Rdson-Junction Temperature

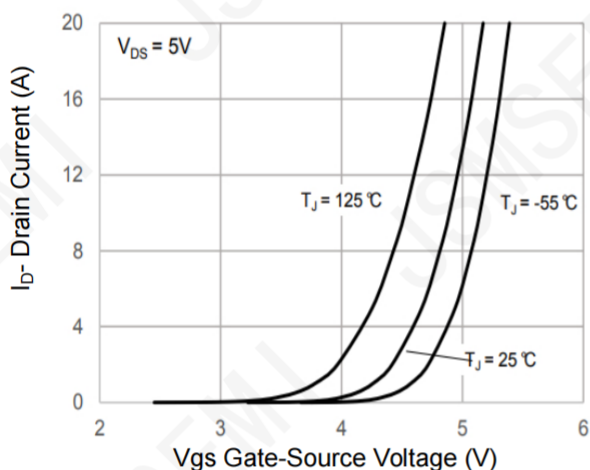


Figure 2 Transfer Characteristics

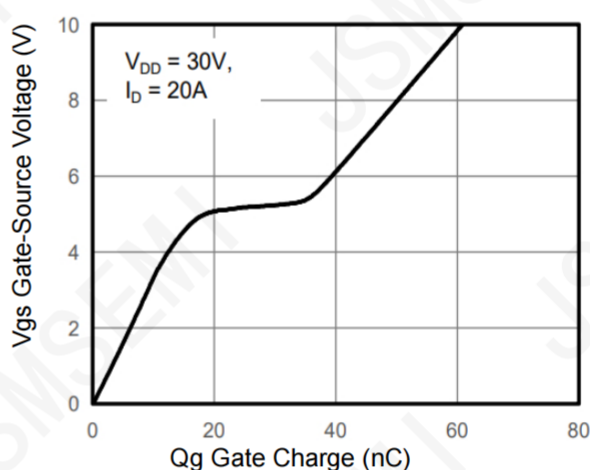


Figure 5 Gate Charge

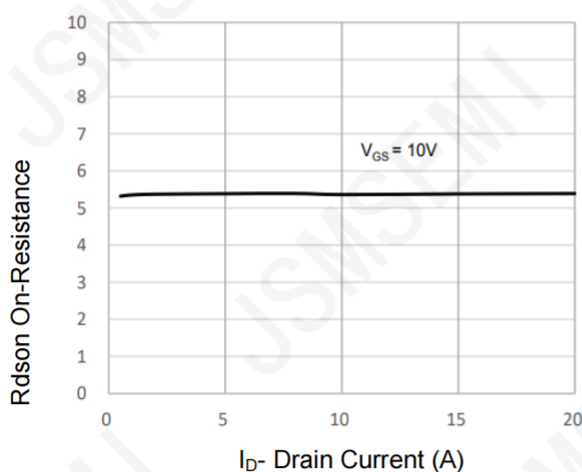


Figure 3 Rdson- Drain Current

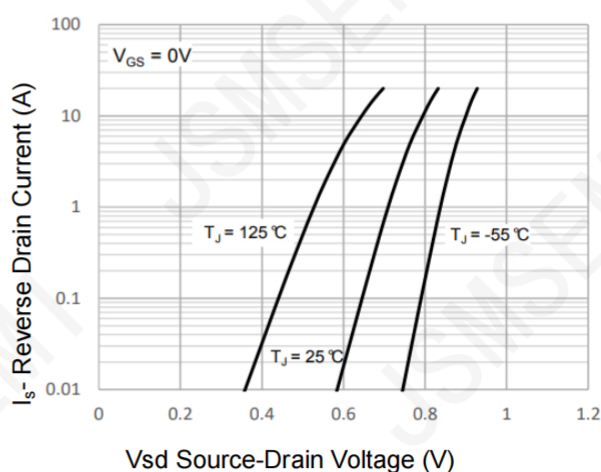


Figure 6 Source- Drain Diode Forward

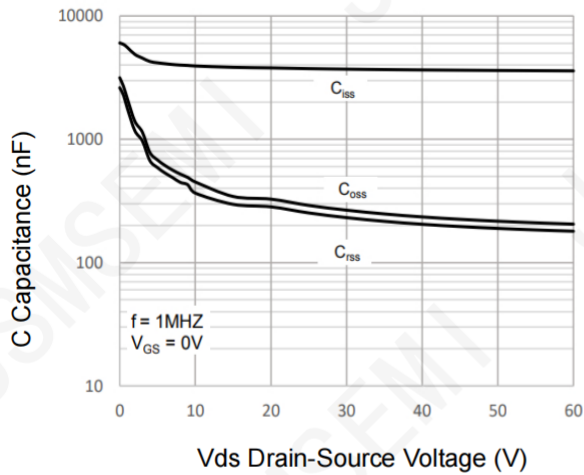


Figure 7 Capacitance vs Vds

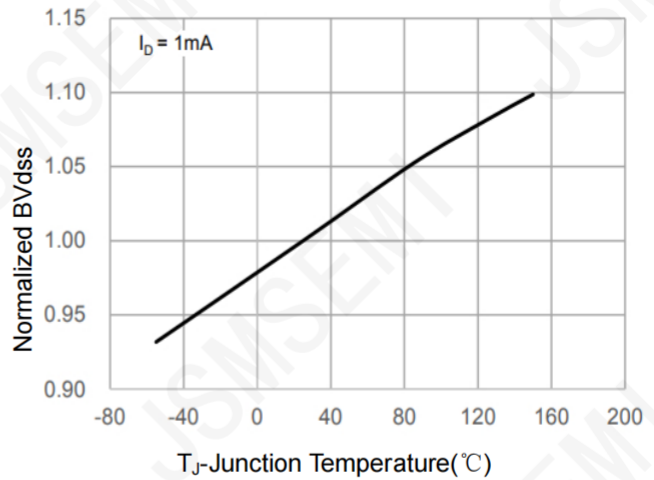


Figure 9 BV_{DSS} vs Junction Temperature

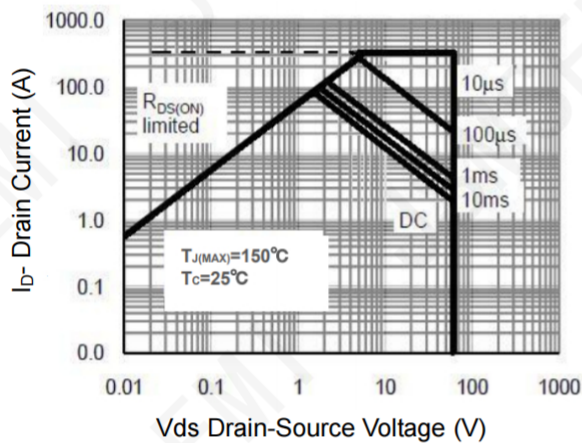


Figure 8 Safe Operation Area

Technical drawing of a square flange with four mounting holes. The drawing includes three views: front, side, and top.

- Front View (Left):** Shows the square flange with dimensions D (outer width), $D1$ (inner width), L (total height), E (height of the central square), $L3$ (height of the central square), ϕ (hole diameter), $L4$ (height of the mounting hole), e (distance from center to mounting hole center), and b (distance from center to mounting hole center).
- Side View (Middle):** Shows the profile of the flange with dimensions A (width of the top flange), c (thickness of the top flange), h (height of the top flange), $A1$ (width of the central square), $L2$ (height of the central square), and θ (angle of the bottom flange).
- Top View (Right):** Shows the top of the flange with dimensions $D2$ (inner width), V (height of the central square), and $L1$ (height of the mounting hole).

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	