EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

Domestic Part Number	25N06
Overseas Part Number	25N06
Equivalent Part Number	25N06

60V N-Channel Power Mosfet

General Description

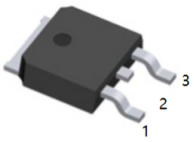
These N-channel enhancement mode power mosfets used advanced trench technology design, provided excellent Rdson and low gate charge. Which accords with the RoHS standard.

Features

- V_{DS} = 60V,ID =25A
  $R_{DS(ON)}$,23 mΩ (Typ) @ VGS =10V
  $R_{DS(ON)}$,30 mΩ (Typ) @ VGS =4.5V
- Fast Switching
- Low ON Resistance(Rdson≤29mΩ)
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Application

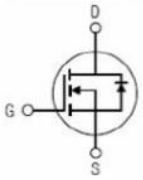
- Power switch circuit of adaptor and charger;
- LED backlight driver;
- Synchronousrectification



1.Date 2.Drain 3.Sourse

TO-252(DPAK) top view

Inner Equivalent Principium Chart



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
25N06	25N06	TO-252	330mm	12mm	2500

Absolute Maximum Ratings(TA=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	TC=25℃	I_D	25	A
	TC=100℃		17.5	A
Pulsed Drain Current [1]		I_{DM}	100	A
Single Puise Avalanche Energy [2]		E_{AS}	56.2	mJ
Maximum Power Dissipation	TC=25℃	P_D	36.2	W
Storage Temperature Range		T_{STG}	-55 to +150	℃
Operating Junction Temperature Range		T_J	-55 to +150	℃

Thermal Resistance

Parameter	Symbol	Min.	Typ.	Max	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	-	3.45	℃/W
Thermal Resistance,Junction to Ambient	$R_{\theta JA}$	-	-	111.5	℃/W

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60V N-Channel Power Mosfet

Electrical Characteristics(TJ=25℃ unless otherwise noted)

OFF CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250uA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA

ON CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	VGS(TH)	V_{DS}=V_{GS},I_{DS}=250uA	1	1.5	2	V
Drain-Source On-State Resistance	RDS(ON)	V_{GS}=10V,I_{DS}=19A	-	23	29	mΩ
		V_{GS}=4.5V,I_{DS}=19A	-	30	38	mΩ

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C_{iss}	VDS =30V, VGS = 0V, f=1MHz	-	939	-	pF
Output Capacitance	C_{oss}		-	73.5	-	
Reverse Transfer Capacitance	C_{rss}		-	52.7	-	
Gate Resisitance	Rg	VDD=0V,VGS=0V, F=1MHz	-	1.9	-	Ω

SWITCHING CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Turn-On Delay Time	$T_{d(on)}$	V_{GS}=10V,V_{Ds}=30V, R_{GEN}=3Ω I_D=20A	-	8.4	-	ns
Rise Time	t_r		-	8.5	-	
Turn-Off Delay Time	$T_{d(off)}$		-	35.4	-	
Fall Time	t_f		-	4.8	-	
Total Gate Charge	Q_g	V_{DS}=30V,I_{DS}=20A, V_{GS}=10V	-	21.2	-	nC
Gate to Source Gate Charge	Q_{gs}		-	3.6	-	
Gate to Drain“Miller”Charge	Q_{gd}		-	5.5	-	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{DS}=20A	-	-	1.2	V
Reverse Recovery Time	trr	TJ=25℃,IF=20A di/dt=100A/us	-	18.8	-	nS
Reverse Recovery Charge	Qrr		-	13.4	-	nC

Notes:

1) Repetitive rating; pulse width limited by maximum junction temperature .

2) L=0.5mH,VDD=30V,Ias=15A Start TJ=25℃

3) Recommend soldering temperature defined by IPC/JEDEC J-STD 020

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60V N-Channel Power Mosfet

Characteristics Curve:

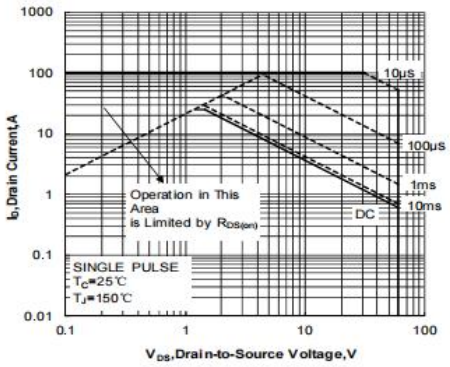

Figure 1 . Maximum Safe Operating Area

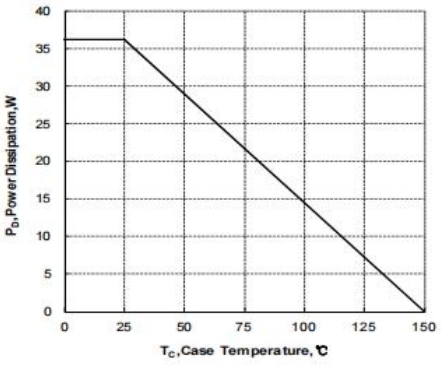

Figure 2. Maximum Power Dissipation vs Case Temperature

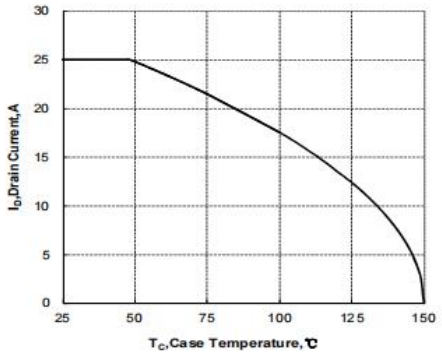

Figure 3. Maximum Continuous Drain Current vs Case Temperature

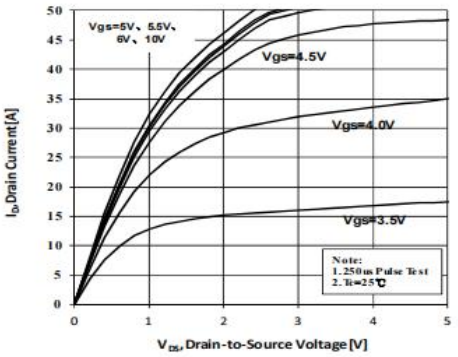

Figure 4. Typical output Characteristics

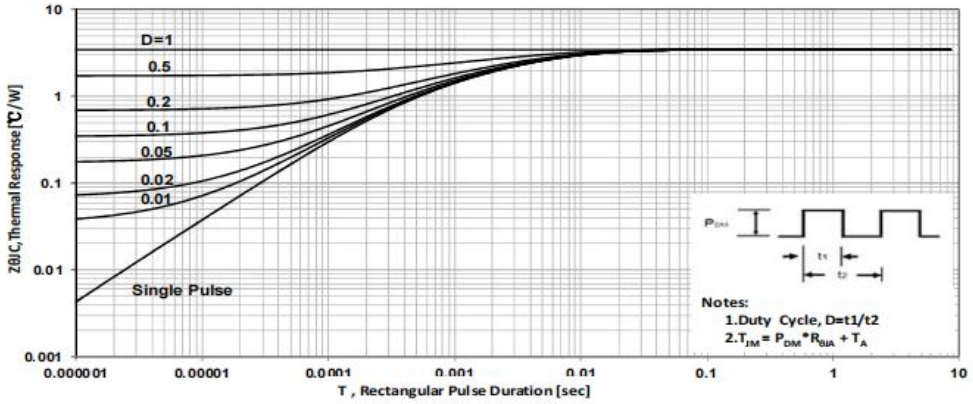

Figure 5 Maximum Effective Thermal Impedance , Junction to Case

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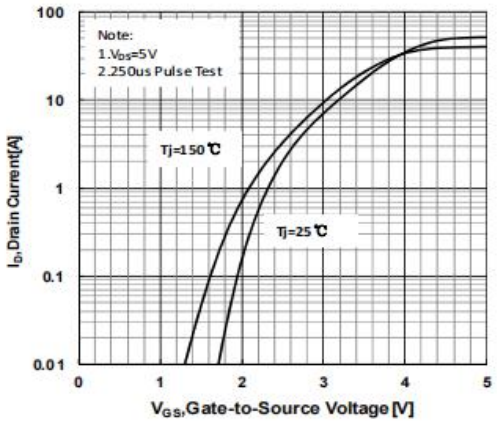

Figure 6 Typical Transfer Characteristics

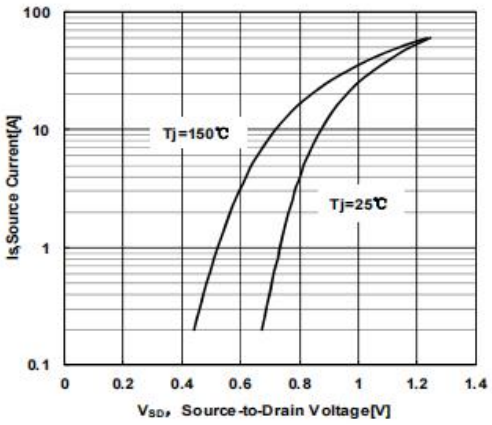

Figure 7 Typical Body Diode Transfer Characteristics

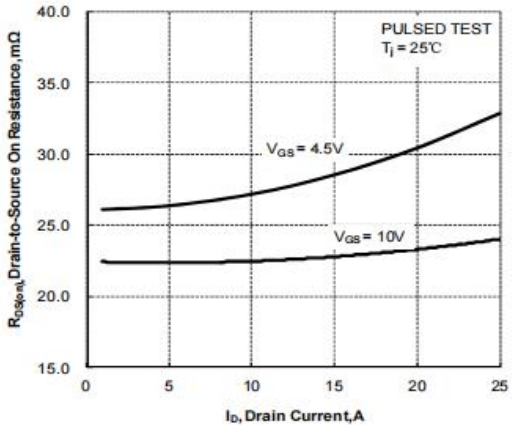

Figure 8. Drain-to-Source On Resistance vs Drain Current

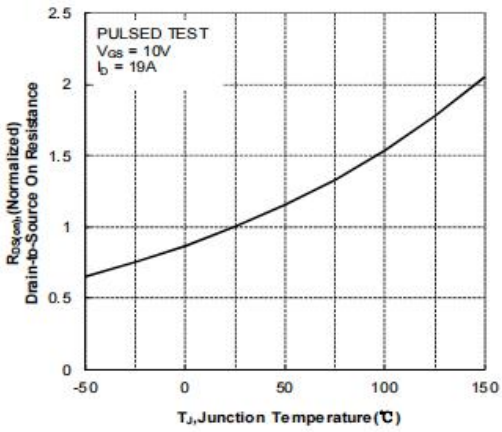

Figure 9. Normalized On Resistance vs Junction Temperature

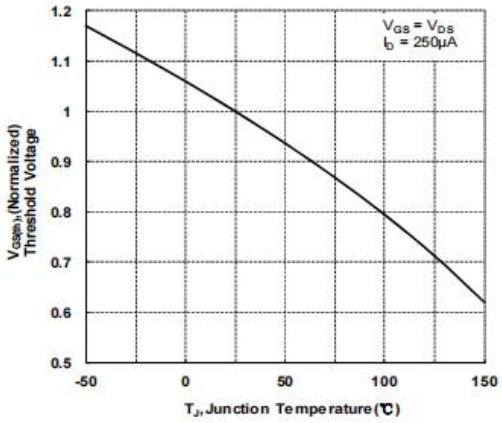

Figure10. Normalized Threshold Voltage vs Junction Temperature

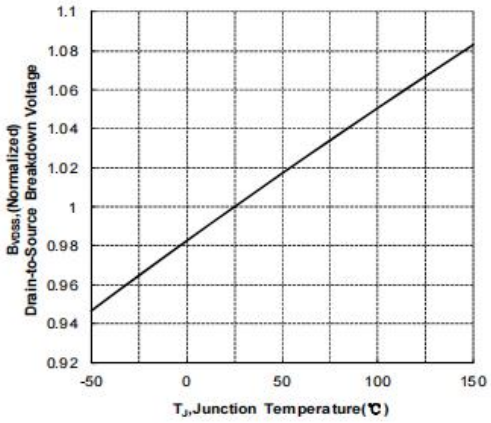

Figure 11. Normalized Breakdown Voltage vs Junction Temperature

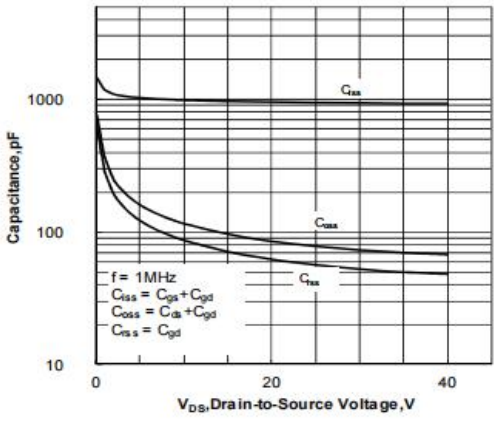

Figure 12. Capacitance Characteristics

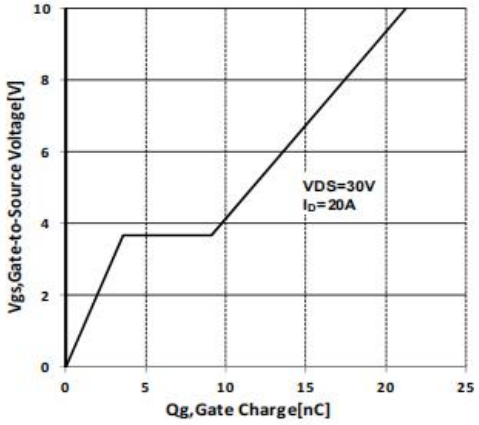

Figure 13 Typical Gate Charge vs Gate to Source Voltage

Test Circuit and Waveform

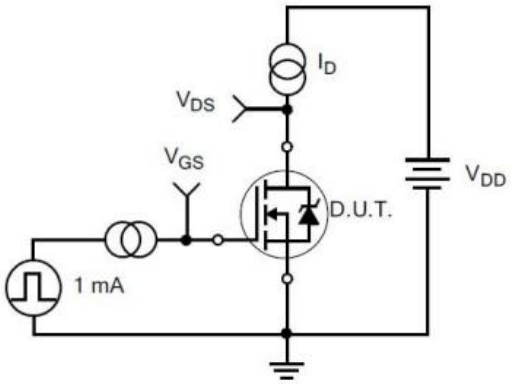

Figure 14. Gate Charge Test Circuit

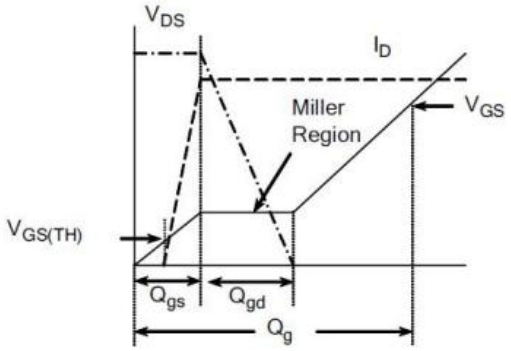

Figure 15. Gate Charge Waveforms

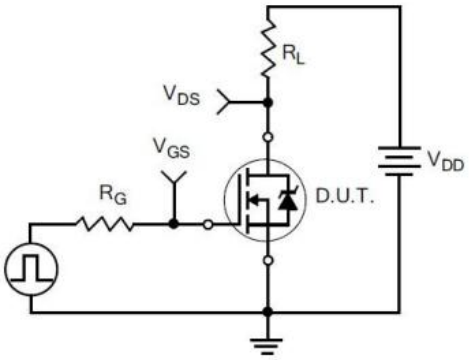

Figure 16. Resistive Switching Test Circuit

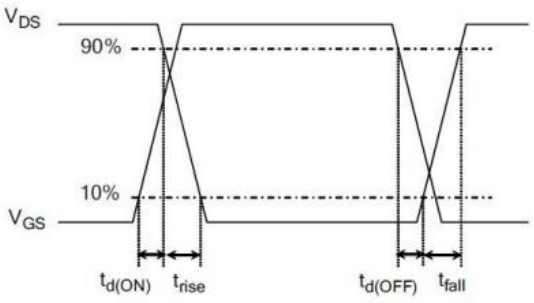

Figure 17. Resistive Switching Waveforms

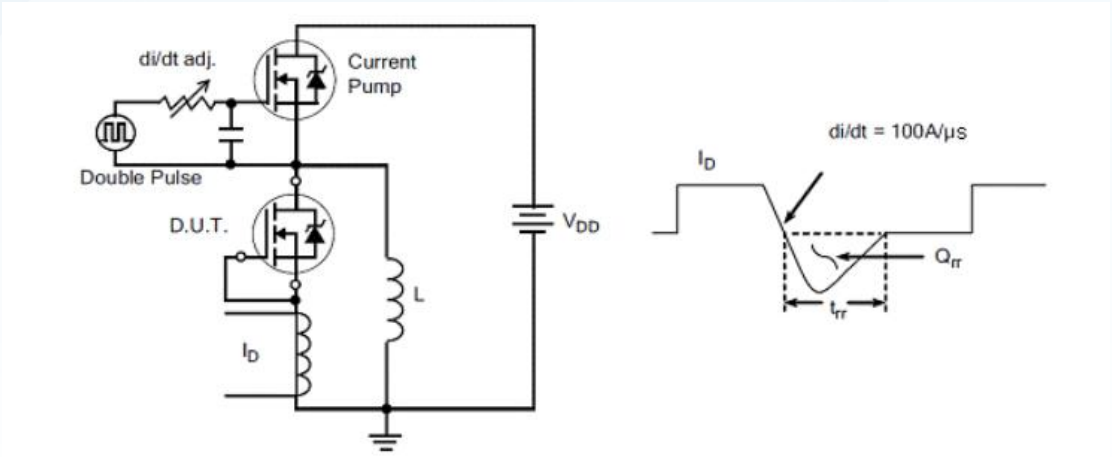

Figure 18. Diode Reverse Recovery Test Circuit

Figure 19. Diode Reverse Recovery Waveform

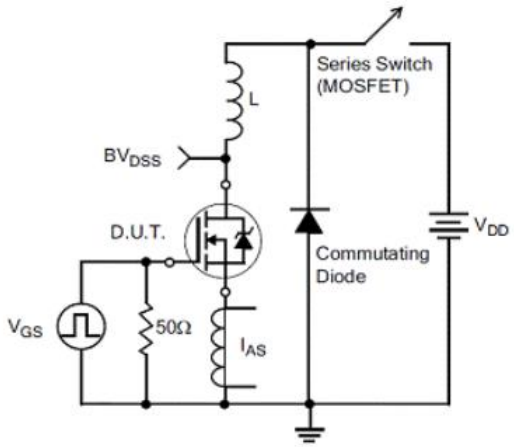

Figure20.Unclamped Inductive Switching Test Circuit

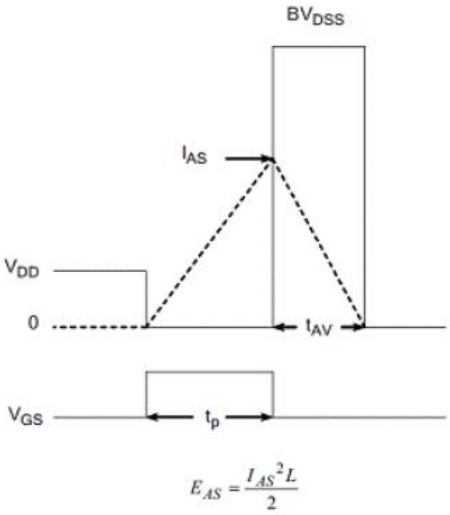

Figure21.Unclamped Inductive Switching Waveform

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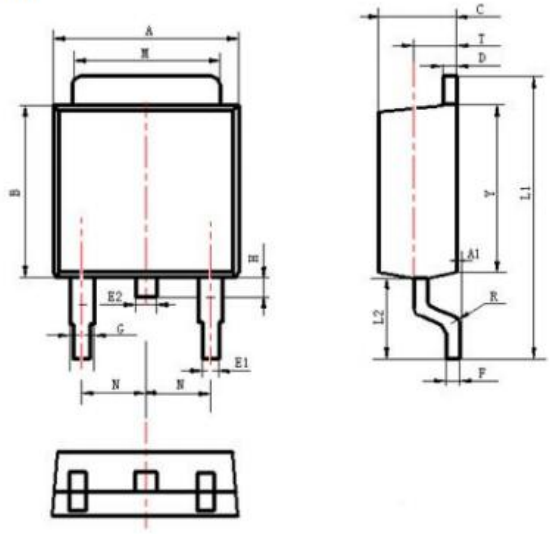
Package Information：



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.16
B	5.70	6.30
C	2.10	2.50
D	0.30	0.70
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.40	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

TO-252 Package

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