1.

The 30N06 is the highest performance trench N-ch MOSFETs with extreme high cell density,which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.The 30N06 meet the RoHS and Green Product requirenment,100%EAS guaranteed with full function reliability approved.

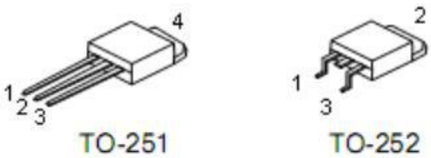
2.

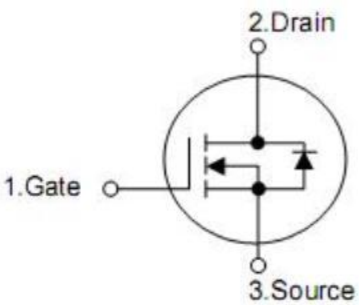
- $R_{DS(on)}$=25mΩ @ V_{DS}=60V
- Avanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- 100%EAS Guaranteed
- Green Device Available

3.

- High Frequency Point-of-Load Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch

4.





Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

5. Absolute maximum ratings

Parameter		Symbol	Rating	Units
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current, V_{GS} @10V[1]	T_C=25°C	I_D	25	A
	T_C=100°C		18	A
Pulsed drain current [2]		I_{DM}	50	A
Single pulse avalanche energy[3]		E_{AS}	34.5	mJ
Avalanche current		I_{AS}	22.6	A
Total power dissipation[4]	T_C=25 °C	P_D	34.7	W
Operation junction temperature range		T_J	-55 to150	°C
Storage temperature range		T_{STG}	-55 to150	°C

6. Thermal characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal resistance,Junction-ambient[1]	$R_{\theta JA}$	--	62	°C/W
Thermal resistance,Junction-case[1]	$R_{\theta JC}$	--	3.6	

7. Electrical characteristics

(T_J=25°C,unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	60	-	-	V
BV_{DSS} temperature coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25 °C, I_D=1mA		0.063		V/°C
Static drain-source on-resistance2	$R_{DS(on)}$	V_{GS}=10V,I_D=15A		25	30	mΩ
		V_{GS}=4.5V,I_D=10A		30	38	
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.2		2.5	V
$V_{GS(th)}$ temperature coefficient	$\triangle V_{GS(th)}$			-5.24		mV/°C
Drain-source leakage current	I_{DSS}	V_{DS}=48V, V_{GS}=0V T_J=25°C			1	μA
		V_{DS}=48V, V_{GS}=0V T_J=55°C			5	μA
Gate- source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Forward transconductance	gfs	V_{DS}=5V, I_D=15A		17		S
Gate resistance	R_g	V_{DS}=0V, V_{GS}=0V,f=1MHz		3.2		Ω
Total gate charge(4.5V)	Q_g	V_{DS}=48V, V_{GS}=4.5V I_D =10A	-	12.56		nC
Gate-source charge	Q_{gs}			3.24		
Gate-drain charge	Q_{gd}			6.31		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,I_D=10A, R_G=3.3Ω, V_{GS}=10V		8		ns
Rise time	t_r			14.2		
Turn-off delay time	$t_{d(off)}$			24.4		
Fall time	t_f			4.6		
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz		1345		pF
Output capacitance	C_{oss}			72.5		
Reverse transfer capacitance	C_{rss}			54.4		
Single pulse avalanche energy5	EAS	V_{DD}=25V,L=0.1mH, I_{AS}=15A	15.2			mJ
Continuous source current1,6	I_S	V_G= V_D==0V, Force current			25	A
Pulsed source current2,6	I_{SM}				50	A
Diode forward voltage2	V_{SD}	V_{GS}=0V,I_S=1A, T_J=25°C			1.2	V

Note:1.The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper.

2.The data tested by pulsed, pulse width<300μs,duty cycle<2%

3.The EAS data shows Max.rating.The test condition is V_{DD}=25V, V_{GS}=10V,L=0.1mH,I_{AS}=15A

4.The power dissipation is limited by 150°C junction temperature

5.The Min, value is 100% EAS tested guarantee.

6.The data is theoretically the same as I_D and I_{DM},in real applications, should be limited by total power dissipation.

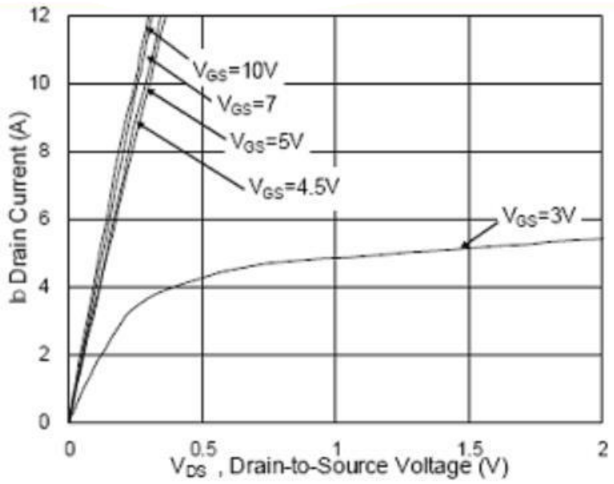


Fig.1 Typical Output Characteristics

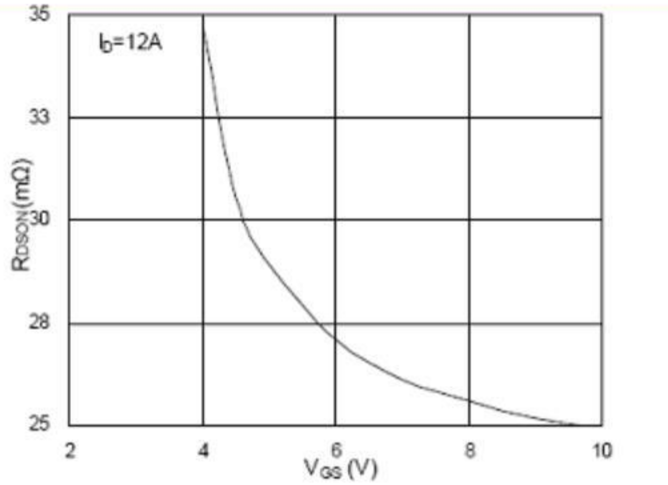


Fig.2 On-Resistance v.s Gate-Source

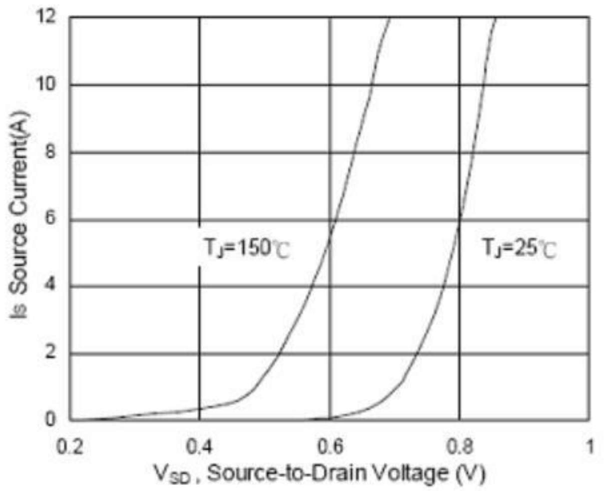


Fig.3 Forward Characteristics of Reverse

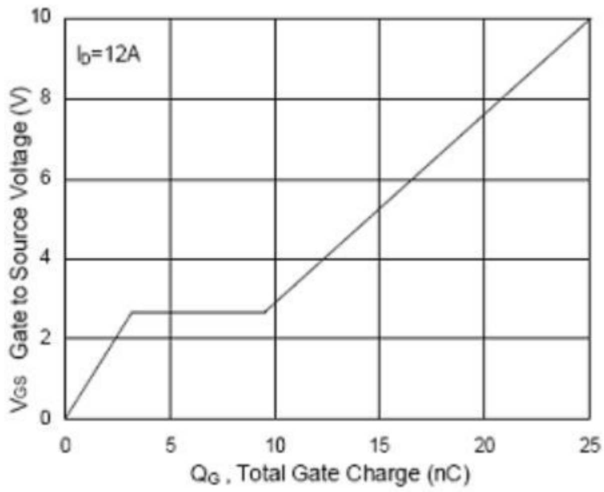


Fig.4 Gate-Charge characteristics

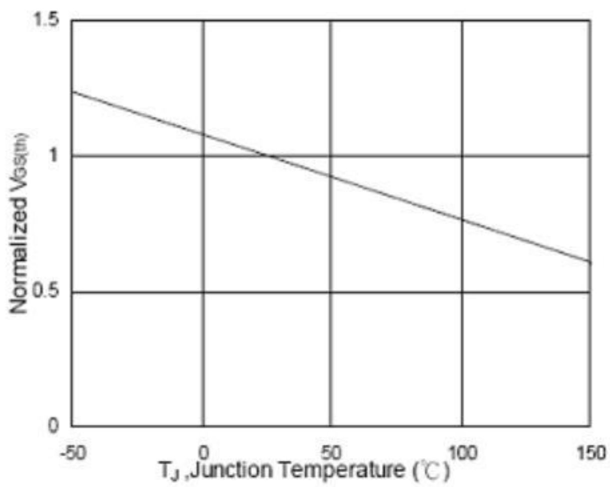


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

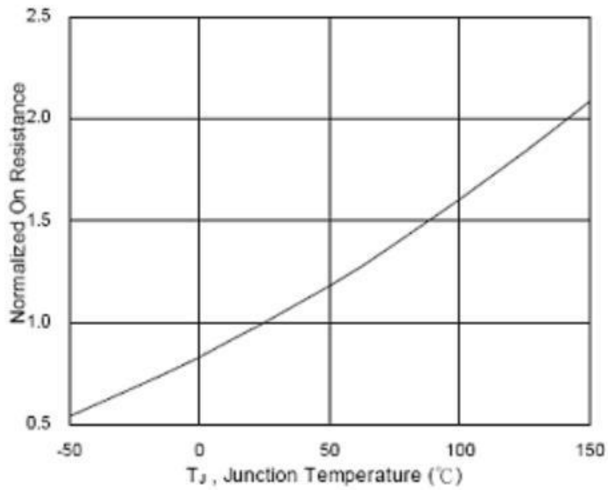


Fig.6 Normalized R_{DSON} v.s T_J

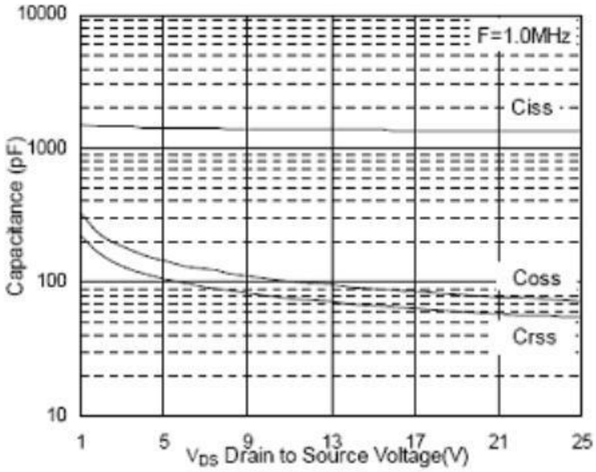


Fig.7 Capacitance

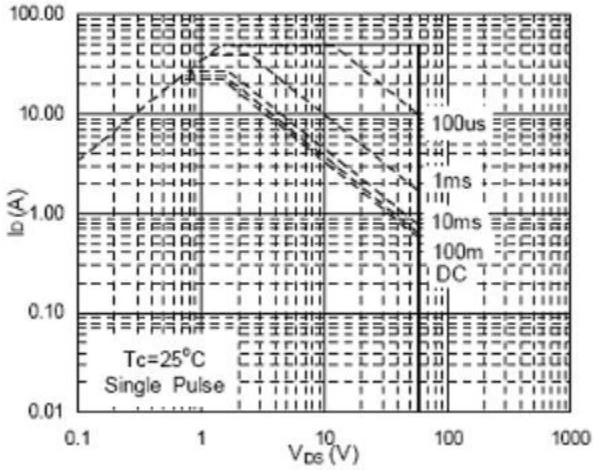


Fig.8 Safe Operating Area

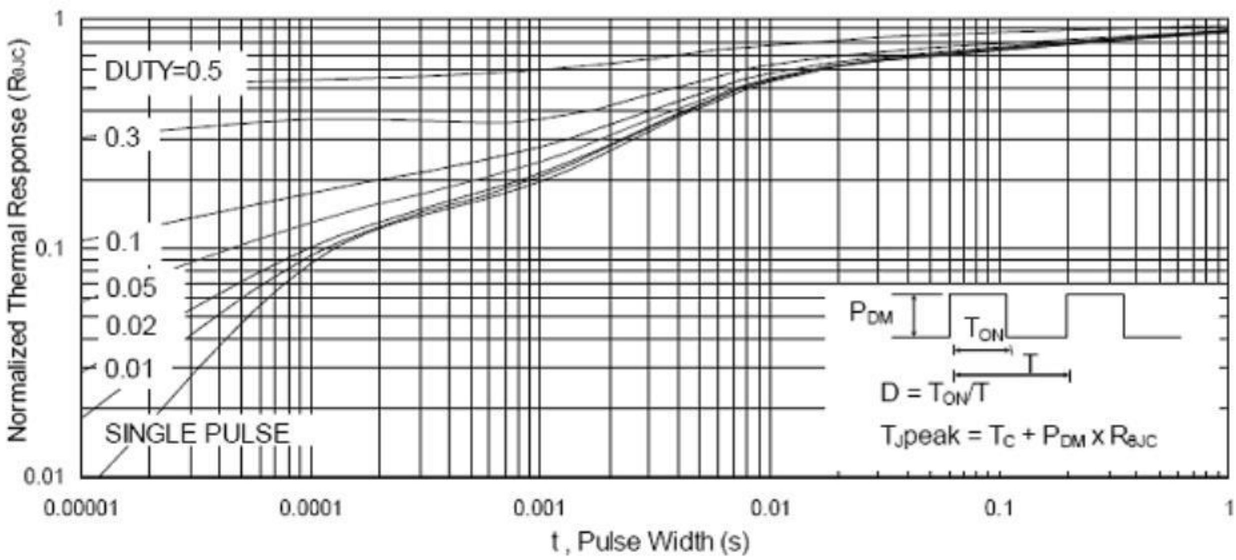


Fig.9 Normalized Maximum Transient Thermal Impedance

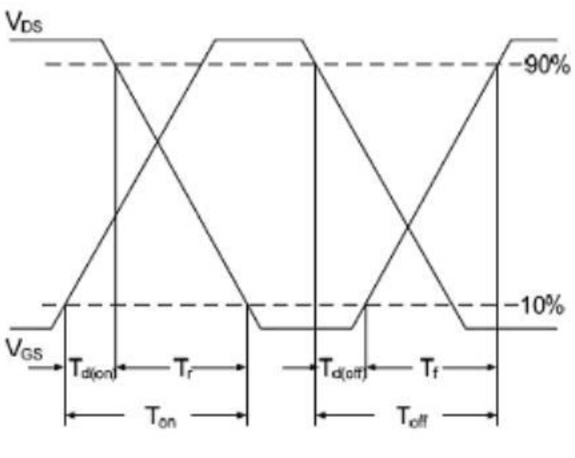


Fig.10 Switching Time Waveform

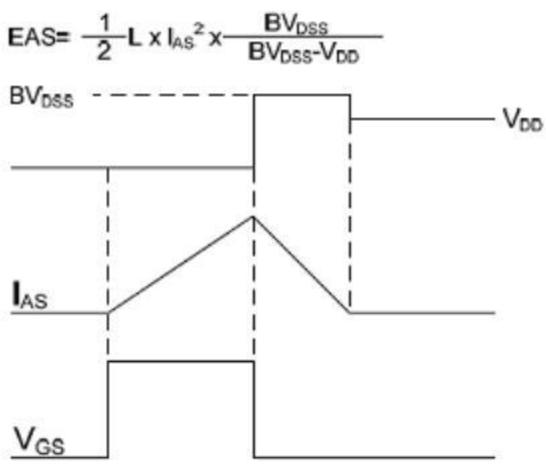


Fig.11 Unclamped Inductive Waveform