



YEA SHIN TECHNOLOGY CO., LTD

YS9971AM

Dual N-Channel Enhancement MOSFET



VDS= 60V, ID= 5A

DESCRIPTION

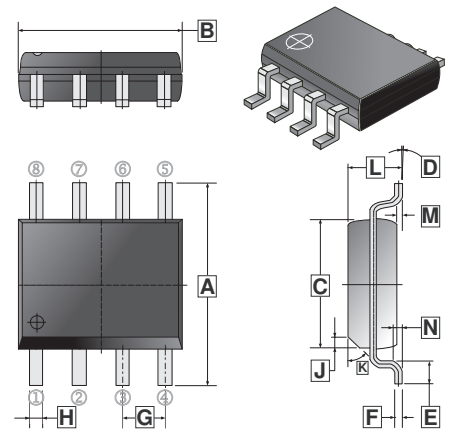
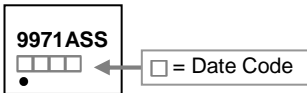
The YS9971AM is the highest performance trench dual N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications .

The YS9971AM meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

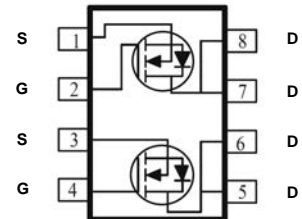
MARKING CODE



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.79	6.20	H	0.33	0.51
B	4.70	5.11	J	0.375 REF.	
C	3.70	4.10	K	45° REF.	
D	0°	8°	L	1.30	1.752
E	0.38	1.27	M	0.10	0.25
F	0.10	0.26	N	0.25 REF.	
G	1.27 TYP.				

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹ @ V _{GS} =10V	I _D	T _A =25°C	5
		T _A =70°C	4
Pulsed Drain Current ³	I _{DM}	14	A
Power Dissipation@ T _A =25°C	P _D	1.5	W
Operating Junction & Storage Temperature Range	T _J , T _{STG}	-55~150	°C
Thermal Resistance Rating			
Thermal Resistance Junction-Ambient ¹	R _{θJA}	85	°C/W
Thermal Resistance Junction-Ambient ²	R _{θJA}	135	°C/W
Thermal Resistance Junction-Case ¹	R _{θJC}	50	°C/W

YS9971AM

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	60	-	-	V	V _{GS} =0V, I _D =250μA
Breakdown Voltage Temp. Coefficient	ΔBV _{DS} /ΔT _J	-	0.063	-	V/°C	Reference to 25°C, I _D =1mA
Gate-Threshold Voltage	V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA
Forward Transfer Conductance	g _{fs}	-	20	-	S	V _{DS} =5V, I _D =5A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} =±20V
Drain-Source Leakage Current	I _{DSS}	-	-	1	μA	V _{DS} =48V, V _{GS} =0, T _J =25°C
		-	-	5		V _{DS} =48V, V _{GS} =0, T _J =55°C
Drain-Source On-Resistance ⁴	R _{DS(on)}	-	-	36	mΩ	V _{GS} =10V, I _D =5A
		-	-	45		V _{GS} =4.5V, I _D =2.5A
Total Gate Charge	Q _g	-	12.56	-	nC	I _D =5A V _{DS} =48V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	3.24	-		
Gate-Drain Charge	Q _{gd}	-	6.31	-		
Turn-On Delay Time	T _{d(on)}	-	8	-	nS	V _{DD} =30V I _D =5A V _{GS} =10V R _G =3.3Ω R _L =6Ω
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}	-	1345	-	pF	V _{GS} =0V V _{DS} =25V f=1.0MHz
Output Capacitance	C _{oss}	-	72.5	-		
Reverse Transfer Capacitance	C _{rss}	-	54.4	-		
Source-Drain Diode						
Continuous Source Current ¹	I _S	-	5	-	A	
Pulsed Source Current ³	I _{SM}	-	14	-	A	
Forward On Voltage ⁴	V _{SD}	-	-	1.2	V	I _S =1.6A, V _{GS} =0V

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. when mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

YS9971AM

CHARACTERISTICS CURVE

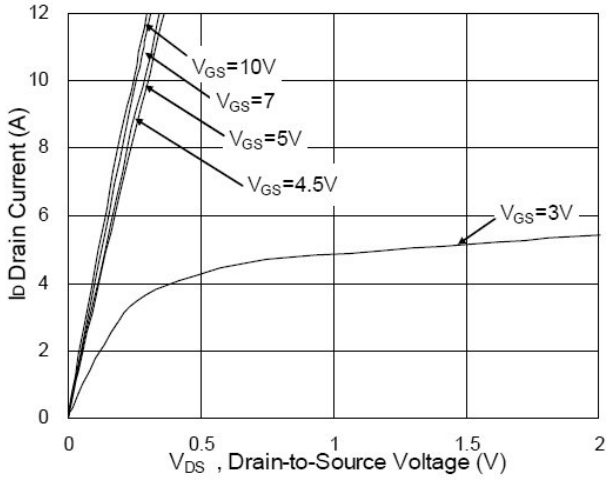


Fig.1 Typical Output Characteristics

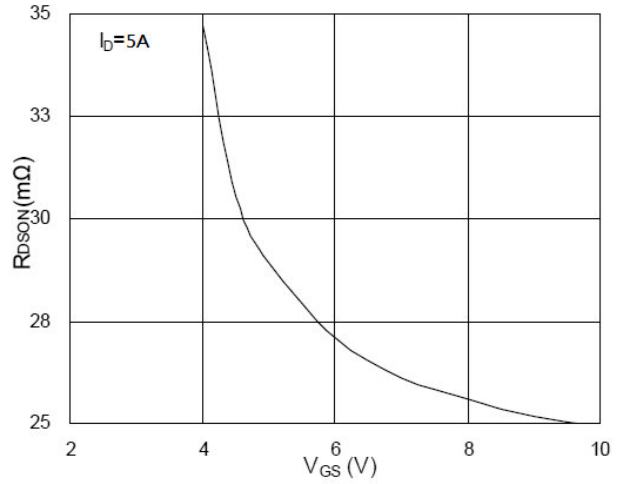


Fig.2 On-Resistance v.s Gate-Source

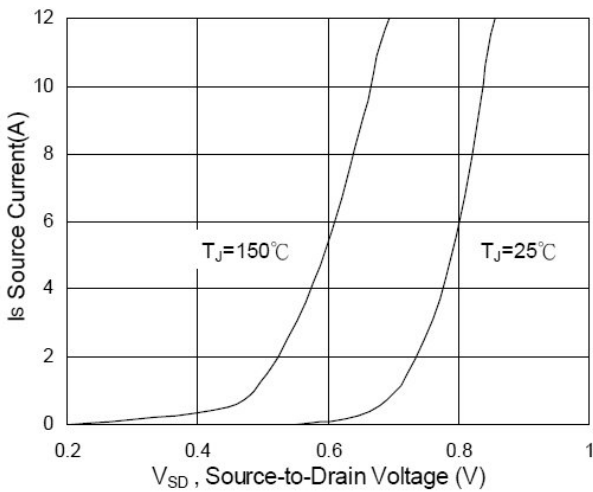


Fig.3 Forward Characteristics of Reverse

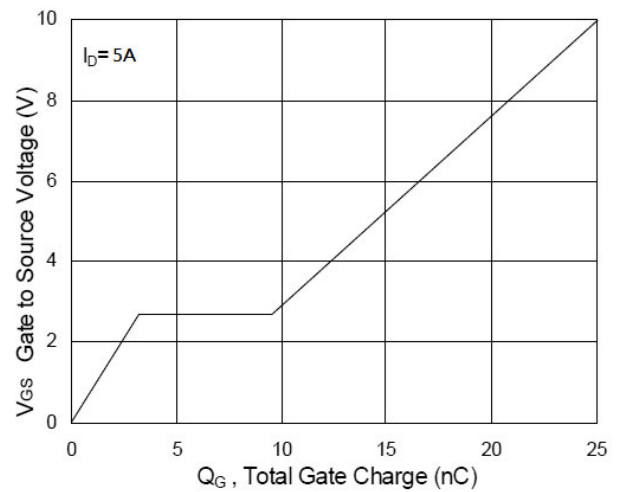


Fig.4 Gate-Charge Characteristics

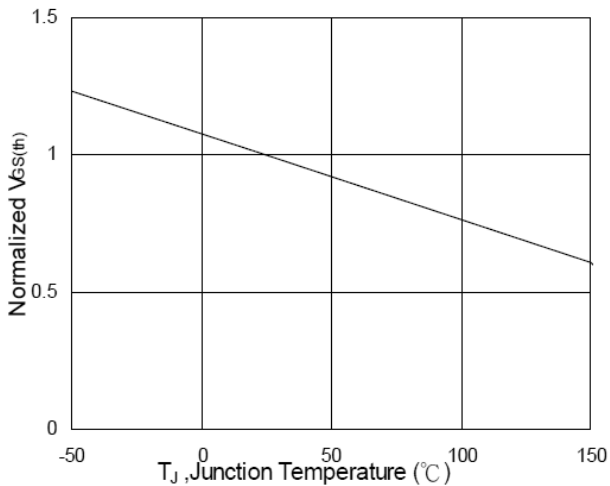


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

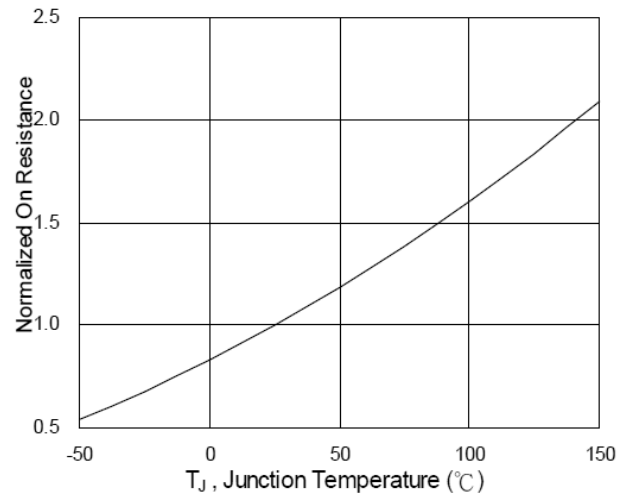


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

YS9971AM

CHARACTERISTICS CURVE

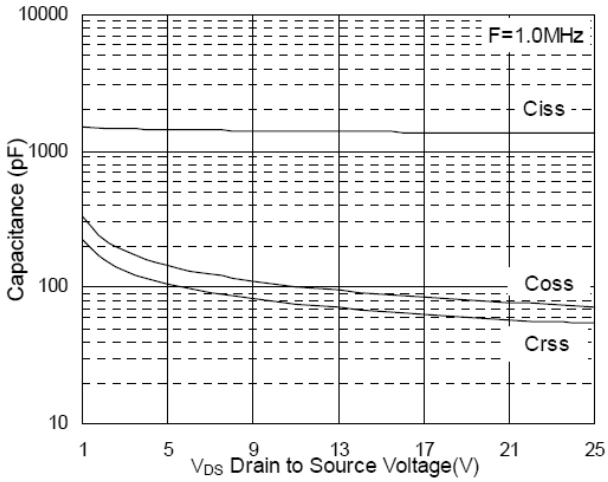


Fig.7 Capacitance

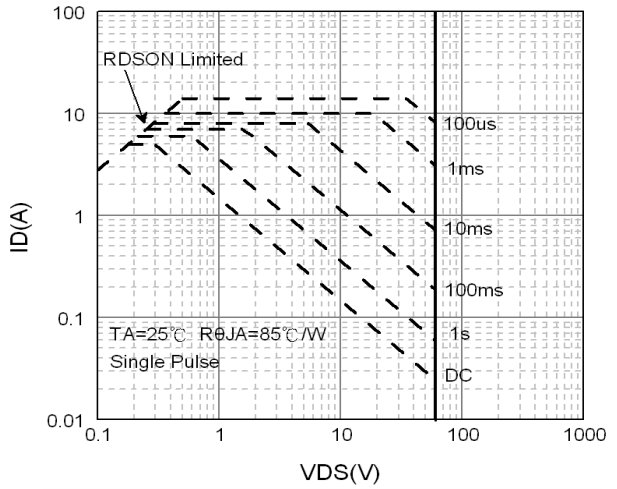


Fig.8 Safe Operating Area

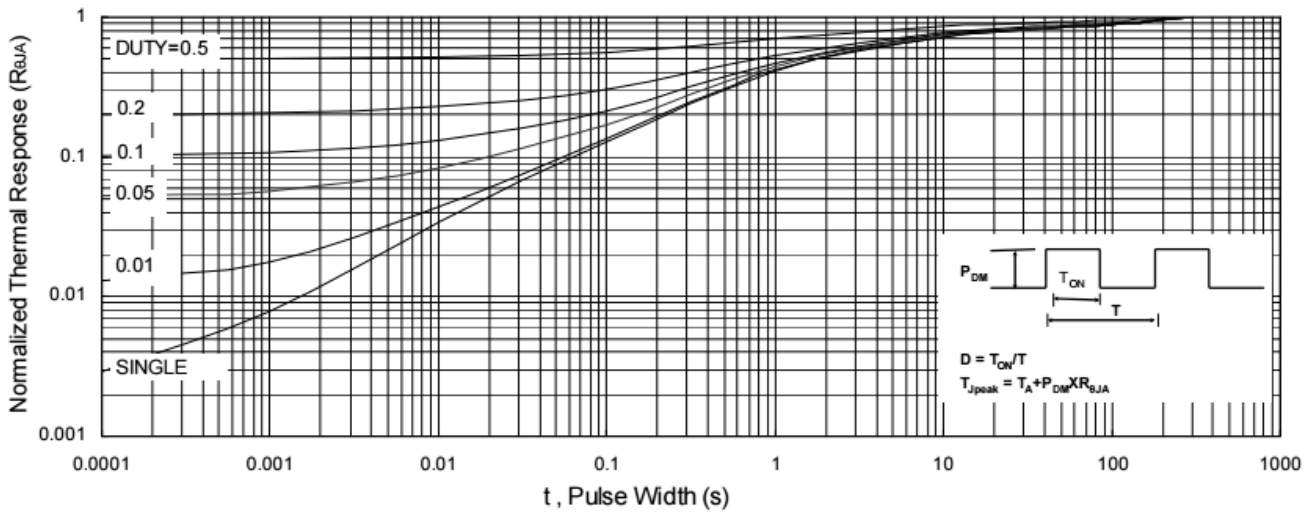


Fig.9 Normalized Maximum Transient Thermal Impedance

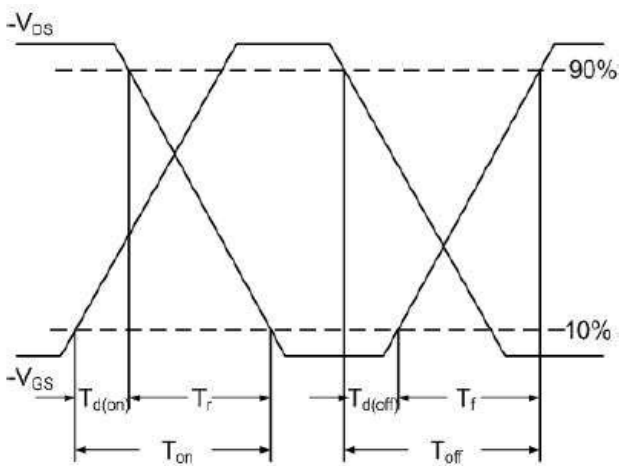


Fig.10 Switching Time Waveform

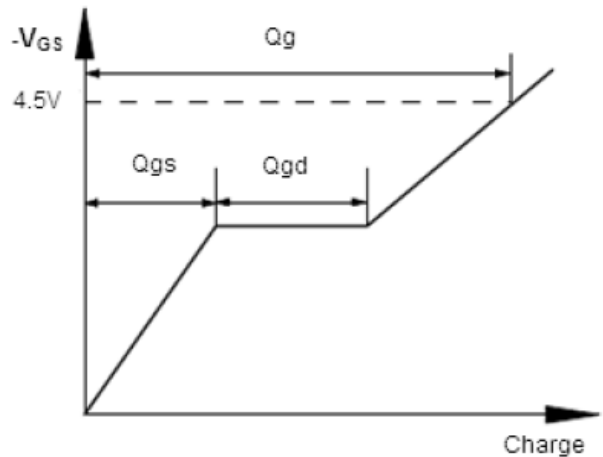


Fig.11 Gate Charge Waveform