YEA SHIN TECHNOLOGY CO., LTD

YS25N06AD

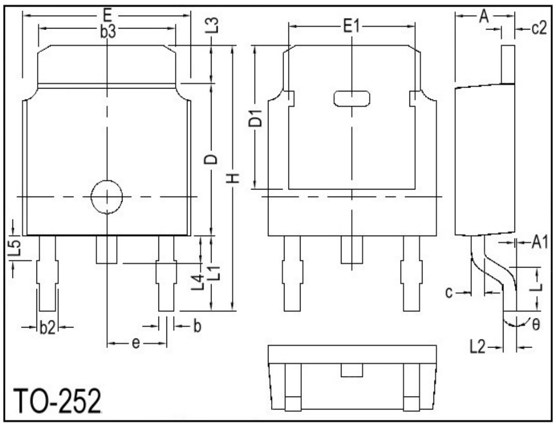
N-Channel Enhancement MOSFET

VDS= 60V, ID= 25A

DESCRIPTION

The YS25N06AD is the highest performance N-ch MOSFETs with super high dense cell design for extremely low $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

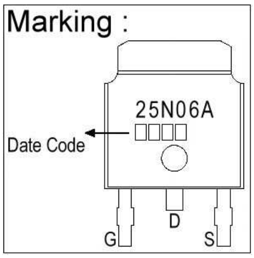
The YS25N06AD meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

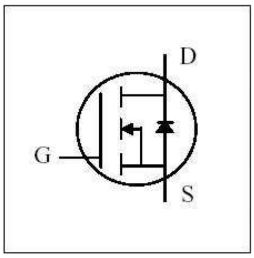


REF.	Millimeter			REF.	Millimeter		
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	2.20	2.30	2.38	E1	4.40	-	-
A1	0	-	0.127	e	2.286 BSC		
b	0.64	0.76	0.88	H	9.40	10.00	10.40
b2	0.77	0.84	1.14	L	1.40	1.52	1.77
b3	5.21	5.34	5.46	L1	2.743 REF.		
c	0.45	0.50	0.60	L2	0.508 BSC		
c2	0.45	0.50	0.58	L3	0.89	-	1.27
D	6.00	6.10	6.223	L4	0.64	-	1.01
D1	5.21	-	-	L5	-	-	-
E	6.40	6.60	6.731	θ	0°	-	10°

FEATURES

- Low On-Resistance
- Improved dv/dt Capability
- Green Device Available
- High Switching Speed
- 100% EAS Guaranteed





Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1]	I_D @T_C=25℃	25	A
	I_D @T_C=100℃	16	A
Pulsed Drain Current[1,2]	I_{DM} @T_C=25℃	100	A
Continuous Drain Current	I_D @T_A=25℃	5.5	A
	I_D @T_A=70℃	4.4	A
Total Power Dissipation[4]	P_D @T_C=25℃	40	W
	P_D @T_A=25℃	2	W
Single Pulse Avalanche Energy, L=0.1mH[3]	E_{AS}	24	mJ
Single Pulse Avalanche Current, L=0.1mH[3]	I_{AS}	22	A
Operating Junction and Storage Temperature Range	T_{J}, T_{STG}	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Conditions	Max. Value	Unit
Thermal Resistance Junction-ambient[1]	$R_{\theta JA}$	Steady State	62.5	℃/W
Thermal Resistance Junction-case[1]	$R_{\theta JC}$	Steady State	3.1	℃/W

DEVICE CHARACTERISTICS

YS25N06AD

Electrical Characteristics (T_J = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	V_{GS}=0, I_D=250uA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.8	2.5	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	uA	V_{DS}=60V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	28	34	mΩ	V_{GS}=10V, I_D=15A
		-	33	40		V_{GS}=4.5V, I_D=10A
Total Gate Charge[2]	Q_g	-	20	-	nC	I_D=20A V_{DS}=30V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	3.8	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	3.9	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	7.1	-	ns	V_{DS}=15V I_D=1A V_{GS}=10V R_G=6Ω
Rise Time	T_r	-	25	-		
Turn-off Delay Time	$T_{d(off)}$	-	31	-		
Fall Time	T_f	-	20	-		
Input Capacitance	C_{iss}	-	1173	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	63	-		
Reverse Transfer Capacitance	C_{rss}	-	44	-		

Guaranteed Avalanche Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Single Pulse Avalanche Energy[5]	EAS	6	-	-	mJ	V_{DD}=25V, L=0.1mH, I_{AS}=11A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage[2]	V_{SD}	-	0.7	1.2	V	I_S=1A, V_{GS}=0V, T_J=25℃
Continuous Source Current[1,6]	I_S	-	-	25	A	---

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.

3. The EAS data shows Max. rating. The test condition is VDD=25V, VGS=10V, L=0.1mH, IAS=22A.

4. The power dissipation is limited by 150℃ junction temperature.

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

6. The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.

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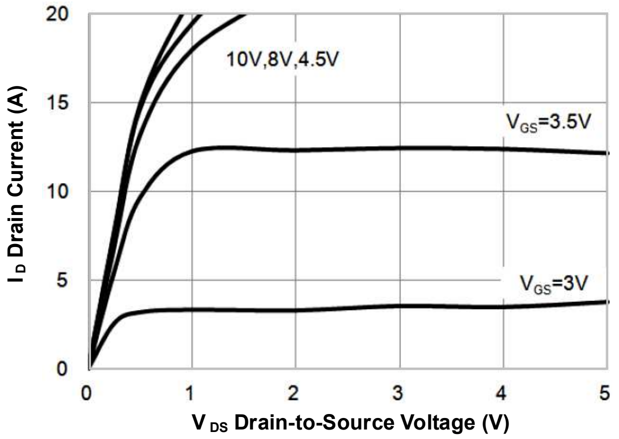

Fig.1 Typical Output Characteristics

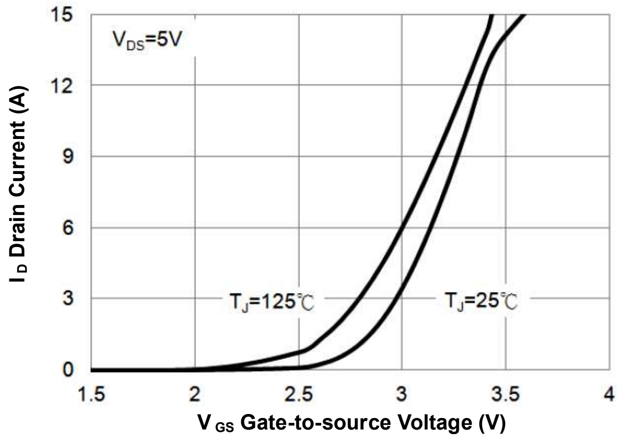

Fig.2 Transfer Characteristics

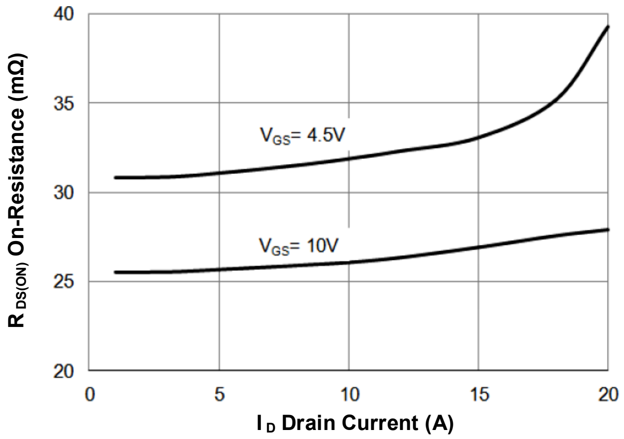

Fig.3 On-Resistance vs. Drain Current

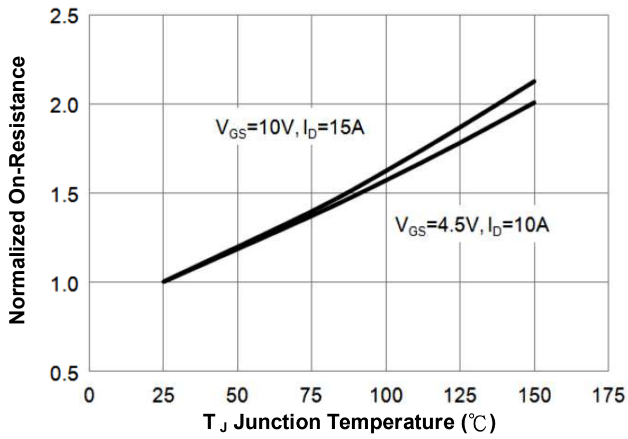

Fig.4 Normalized R_{DSON} vs. T_J

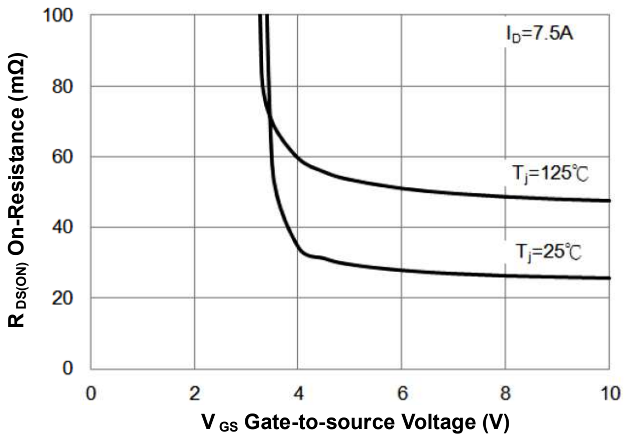

Fig.5 On-Resistance vs. G-S Voltage

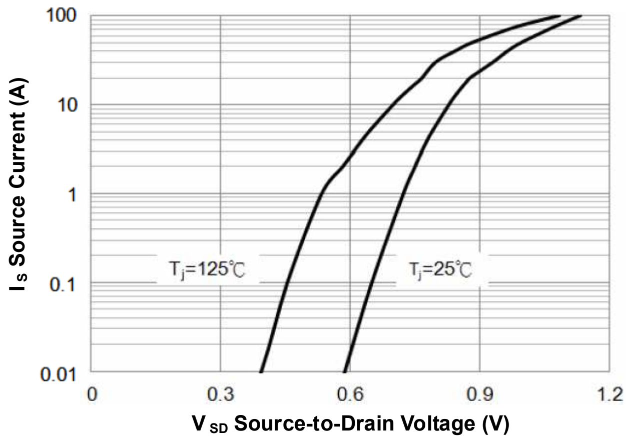

Fig.6 Forward Characteristics of Reverse

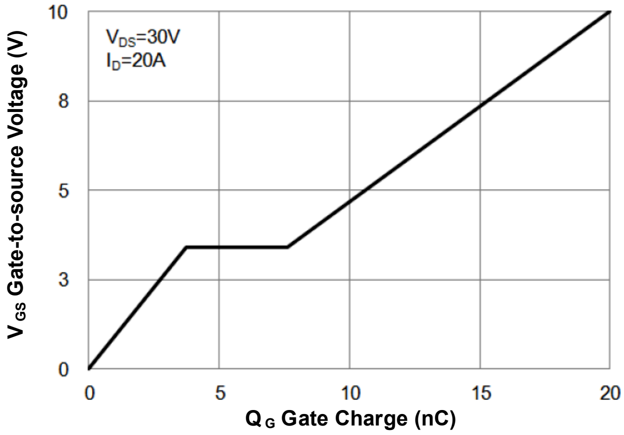

Fig.7 Gate Charge Characteristics

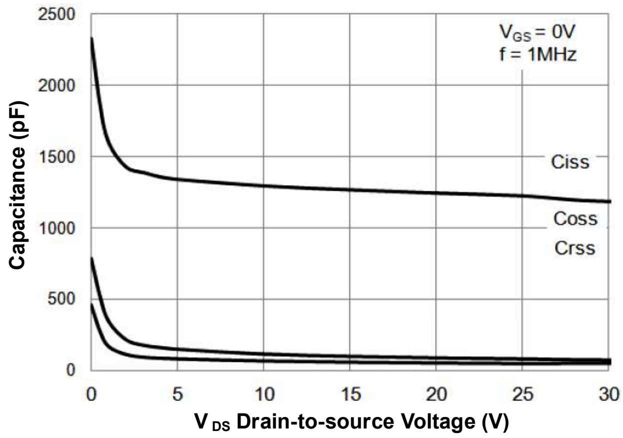

Fig.8 Capacitance Characteristics

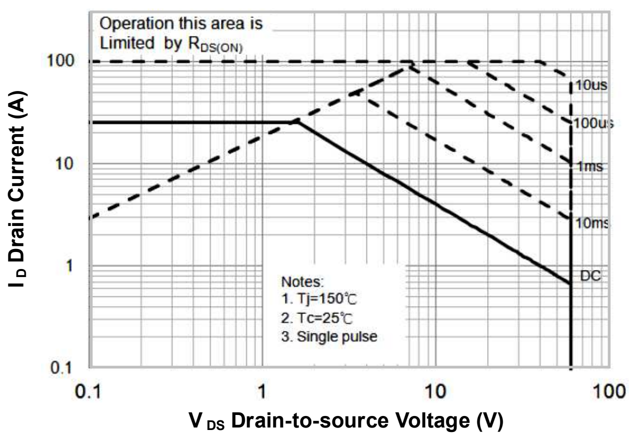

Fig.9 Safe Operating Area

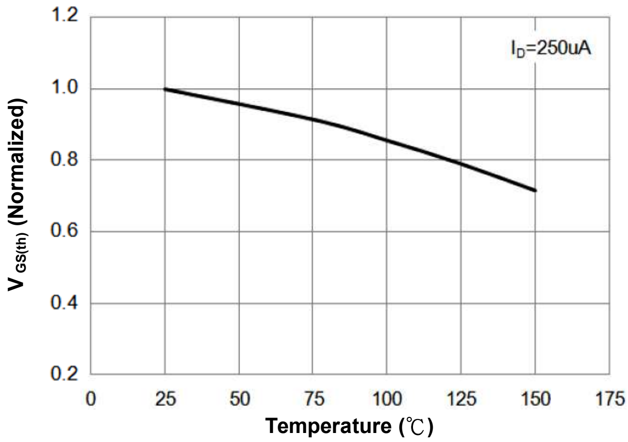

Fig.10 Normalized $V_{GS(th)}$ vs. Temperature

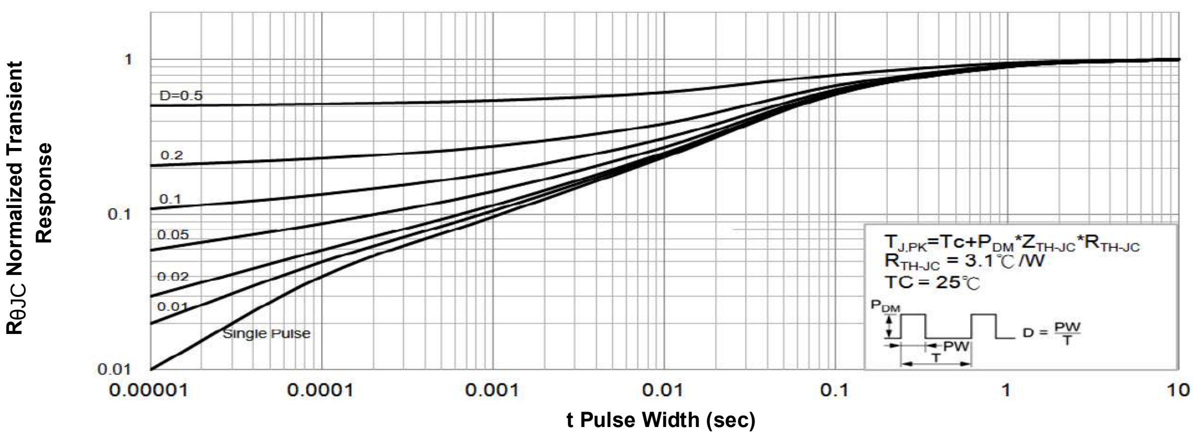

Fig.11 Normalized Maximum Transient Thermal Impedance