N-Channel Enhancement MOSFET

VDS= 30V, ID= 5A

DESCRIPTION

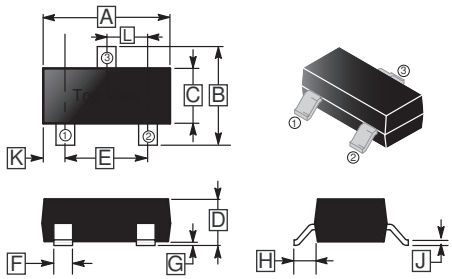
The YS2306A utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The YS2306A is universally used for all commercial-industrial applications.

FEATURES

- Capable of 2.5V Gate Drive
- Lower On-Resistance

SC-59

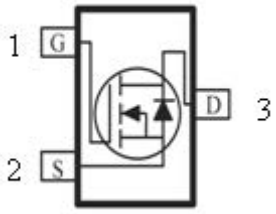


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.10	3.00	H	0.40 REF.	
C	1.20	1.70	J	0.047	0.207
D	0.89	1.40	K	0.5 REF.	
E	2.00 Typ.		L	0.95 REF.	
F	0.30	0.50			

MARKING

2306A

TOP VIEW



PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch

ORDER INFORMATION

Part Number	Type
YS2306A	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current [3], @V_{GS}=4.5V	T_A=25℃	I_D	5	A
	T_A=70℃	I_D	4	A
Pulsed Drain Current [1]		I_{DM}	20	A
Power Dissipation	T_A=25℃	P_D	1.38	W
Linear Derating Factor			0.01	W/℃
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~150	℃
Thermal Data				
Thermal Resistance Junction-ambient [3] Max.		$R_{\theta JA}$	90	℃/W

ELECTRICAL CHARACTERISTICS

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temperature Coefficient		ΔBV_{DSS} /ΔT_J	-	0.1	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage		$V_{GS(th)}$	0.5	-	1.2	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance		g_{fs}	-	13	-	S	V_{DS}=5V, I_D=5A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	uA	V_{DS}=30V, V_{GS}=0
	T_J=70℃		-	-	25	uA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance		$R_{DS(ON)}$	-	-	30	mΩ	V_{GS}=10V, I_D=5A
			-	-	35		V_{GS}=4.5V, I_D=5A
			-	-	50		V_{GS}=2.5V, I_D=2.6A
			-	-	90		V_{GS}=1.8V, I_D=1.0A
Total Gate Charge [2]		Q_g	-	8.5	15	nC	I_D=5A V_{DS}=16V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	1.5	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	3.2	-		
Turn-on Delay Time [2]		$T_{d(on)}$	-	6	-	nS	V_{DS}=15V I_D=5A V_{GS}=10V R_G=3.3Ω R_D=3Ω
Rise Time		T_r	-	20	-		
Turn-off Delay Time		$T_{d(off)}$	-	20	-		
Fall Time		T_f	-	3	-		
Input Capacitance		C_{iss}	-	660	1050	pF	V_{GS}=0 V_{DS}=25V f=1.0MHz
Output Capacitance		C_{oss}	-	90	-		
Reverse Transfer Capacitance		C_{rss}	-	70	-		
Source-Drain Diode							
Forward on Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1.2A, V_{GS}=0
Reverse Recovery Time [2]		T_{rr}	-	14	-	nS	I_S=5A, V_{GS}=0 dI/dt=100A/us
Reverse Recovery Charge		Q_{rr}	-	7	-	nC	

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 270℃/W when mounted on M in. copper pad.

DEVICE CHARACTERISTICS

YS2306A

CHARACTERISTIC CURVE

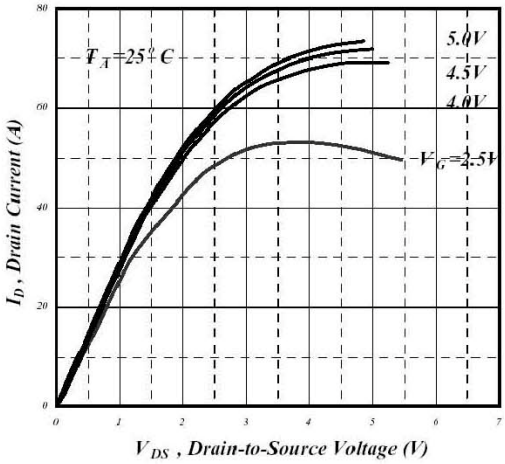


Fig 1. Typical Output Characteristics

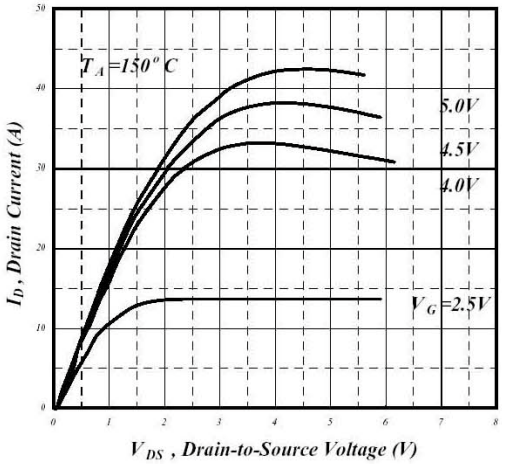


Fig 2. Typical Output Characteristics

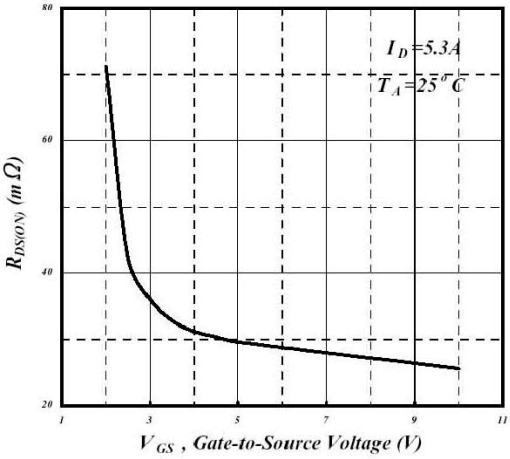


Fig 3. On-Resistance v.s. Gate Voltage

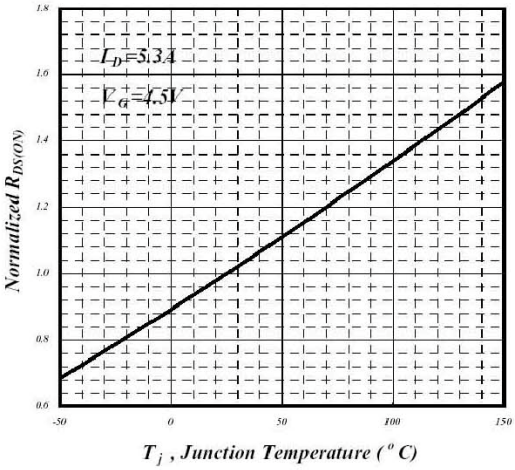


Fig 4. Normalized On-Resistance v.s. Junction Temperature

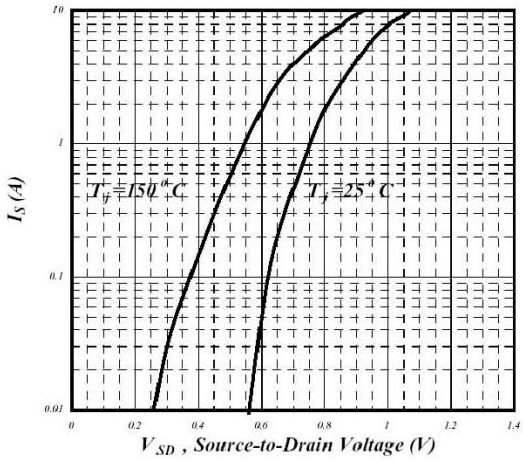


Fig 5. Forward Characteristics of Reverse Diode

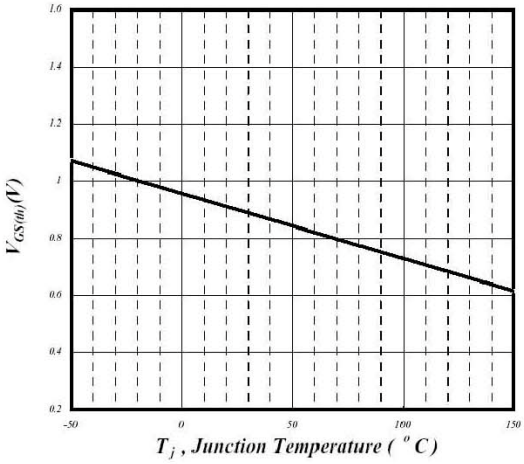


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

DEVICE CHARACTERISTICS

YS2306A

CHARACTERISTIC CURVE

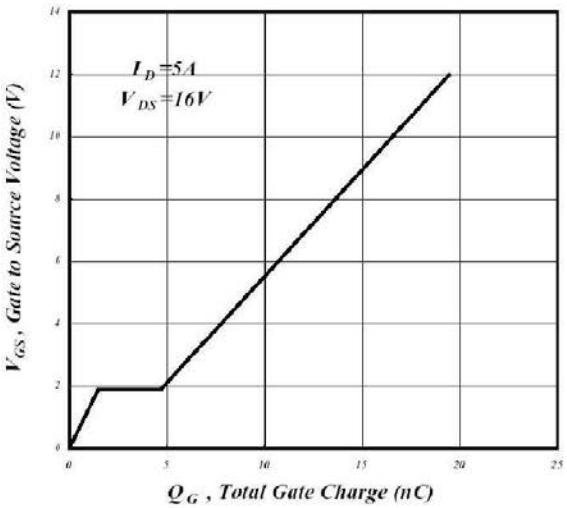


Fig 7. Gate Charge Characteristics

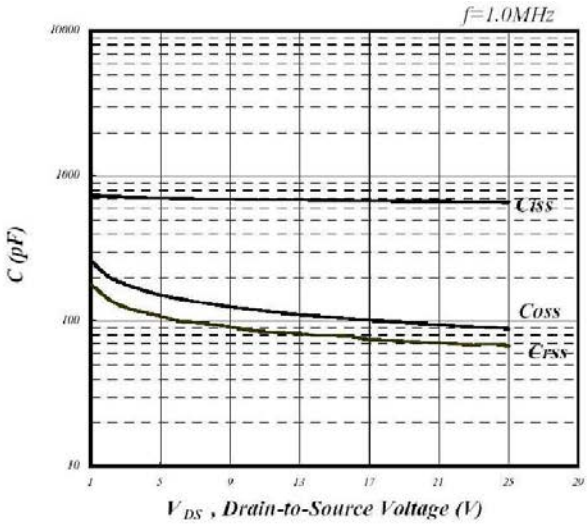


Fig 8. Typical Capacitance Characteristics

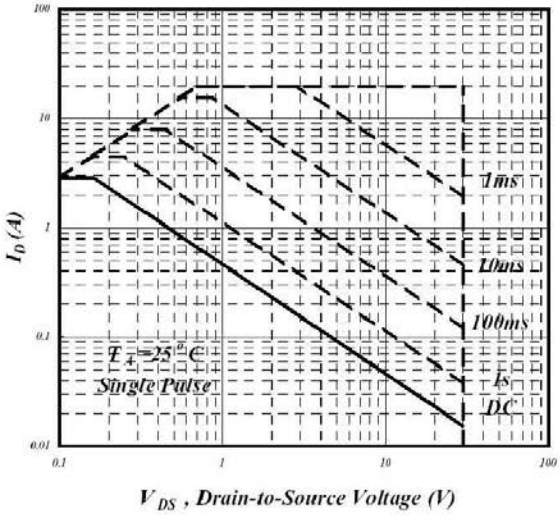


Fig 9. Maximum Safe Operating Area

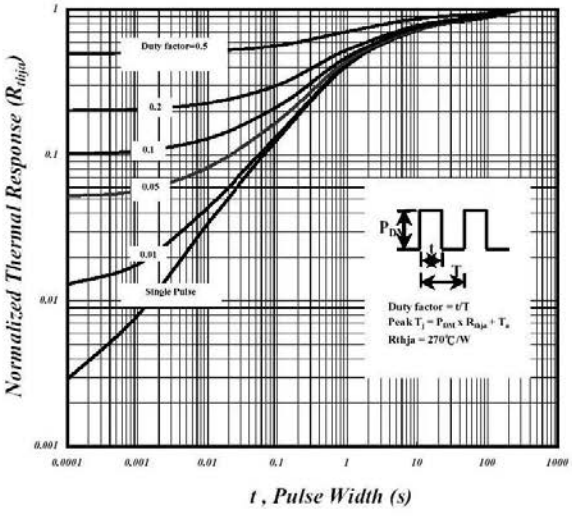


Fig 10. Effective Transient Thermal Impedance

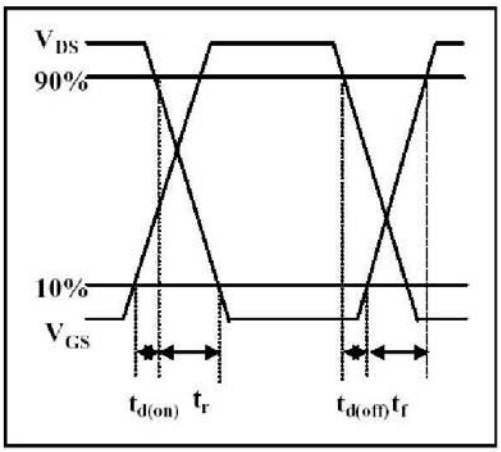


Fig 11. Switching Time Waveform

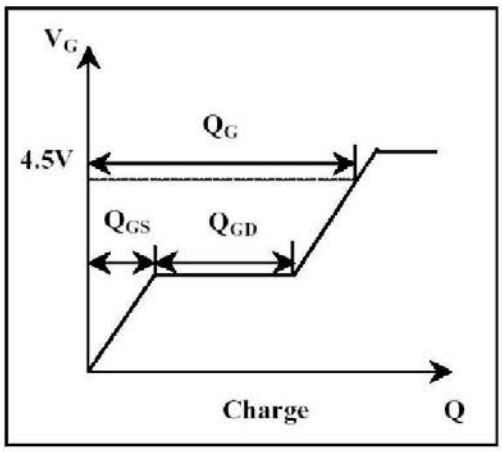


Fig 12. Gate Charge Waveform