YEA SHIN TECHNOLOGY CO., LTD

YS3401

P- Channel Enhancement MOSFET

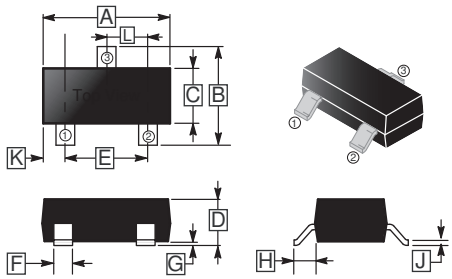
VDS= -30V, ID= -4.2A

DESCRIPTION

The YS3401 is the highest performance trench P-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

The YS3401 meet the RoHS and Green Product requirement with full function reliability approved.

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			

FEATURES

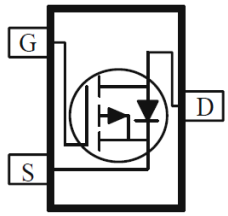
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

MARKING

3401

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch



ORDER INFORMATION

Part Number	Type
YS3401	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings		Unit
			≦10sec	Steady State	
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±12		V
Continuous Drain Current [1]@V_{GS}= -10V	T_A=25℃	I_D	-4.2	-3.7	A
	T_A=70℃		-3.5	-3	
Pulsed Drain Current [3]		I_{DM}	-30		A
Power Dissipation	T_A=25℃	P_D	1.4		W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~150		℃
Thermal Resistance Rating					
Thermal Resistance Junction-ambient [1]		$R_{\theta JA}$	≦10sec, 90		℃/W
			Steady State,125		
Thermal Resistance Junction-ambient [2]			270		
Thermal Resistance Junction-case [1]		$R_{\theta JC}$	80		

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D= -250uA
Gate-Threshold Voltage		$V_{GS(th)}$	-0.6	-	-1.3	V	V_{DS}=V_{GS}, I_D= -250uA
Forward Transconductance		g_{fs}	-	5.6	-	S	V_{DS}= -5V, I_D= -3A
Gate-Body Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	μA	V_{DS}= -24V, V_{GS}=0
	T_J=55℃		-	-	-5		V_{DS}= -24V, V_{GS}=0
Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	50	mΩ	V_{GS}= -10V, I_D= -4.2A
			-	-	65		V_{GS}= -4.5V, I_D= -4A
			-	-	90		V_{GS}= -2.5V, I_D= -1A
Total Gate Charge		Q_g	-	11.9	-	nC	V_{DS}= -15V V_{GS}= -4.5V I_D= -3A
Gate-Source Charge		Q_{gs}	-	1.8	-		
Gate-Drain (“Miller”) Charge		Q_{gd}	-	3	-		
Turn-on Delay Time		$T_{d(on)}$	-	6.6	-	nS	V_{DD}= -15V V_{GS}= -4.5V I_D= -3 R_G=3.3Ω R_L=5Ω
Rise Time		T_r	-	27.8	-		
Turn-off Delay Time		$T_{d(off)}$	-	46.2	-		
Fall Time		T_f	-	20.6	-		
Input Capacitance		C_{iss}	-	920	-	pF	V_{GS}=0 V_{DS}= -15V f=1.0MHz
Output Capacitance		C_{oss}	-	73	-		
Reverse Transfer Capacitance		C_{rss}	-	71	-		
Source-Drain Diode							
Diode Forward Voltage [4]		V_{SD}	-	-	-1.2	V	I_S= -1A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	-3.7	A	
Pulsed Source Current [3]		I_{SM}	-	-	-15	A	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature.
4. The data tested by pulsed, pulse width≦300us, duty cycle≦2%.

DEVICE CHARACTERISTICS

YS3401

CHARACTERISTIC CURVES

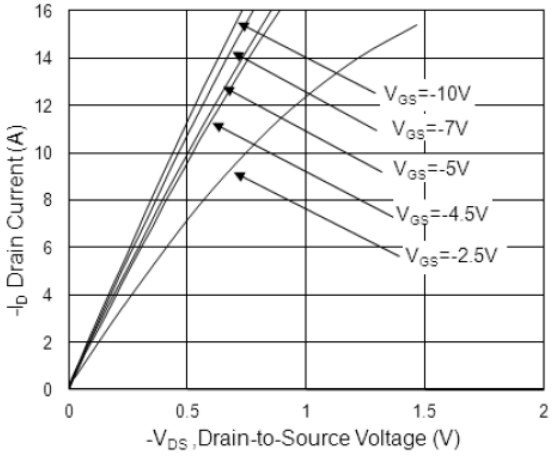


Fig.1 Typical Output Characteristics

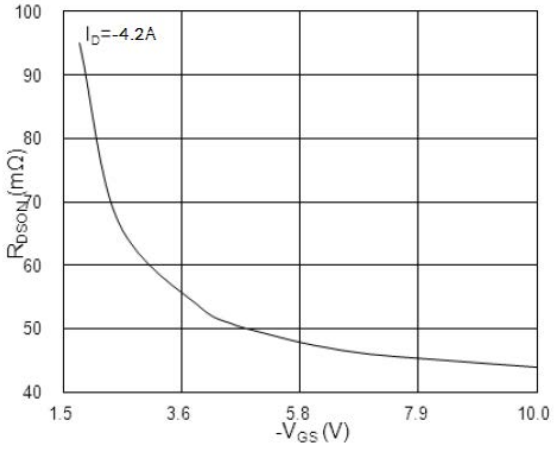


Fig.2 On-Resistance vs. G-S Voltage

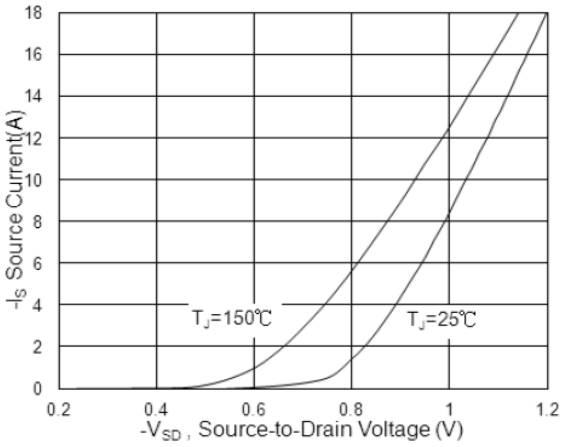


Fig.3 Forward Characteristics Of Reverse

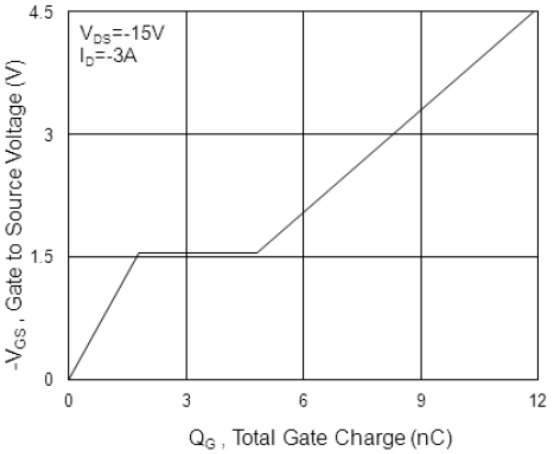


Fig.4 Gate-Charge Characteristics

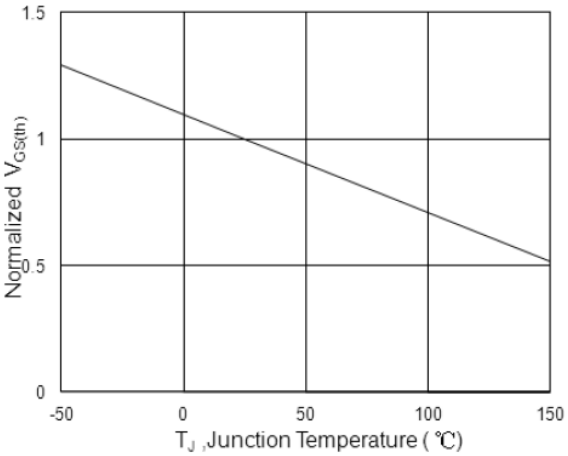


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

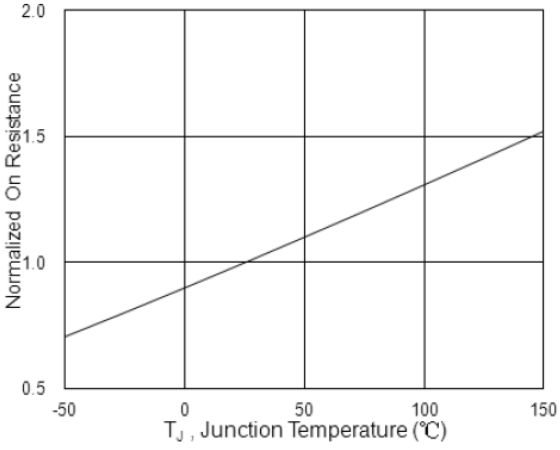


Fig.6 Normalized R_{DSON} vs. T_J

DEVICE CHARACTERISTICS

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CHARACTERISTIC CURVES

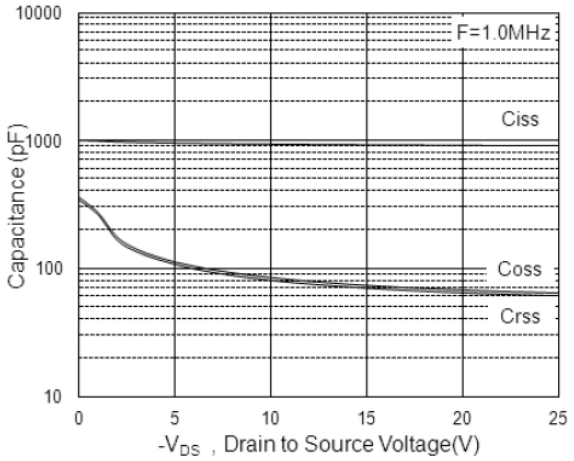

Fig.7 Capacitance

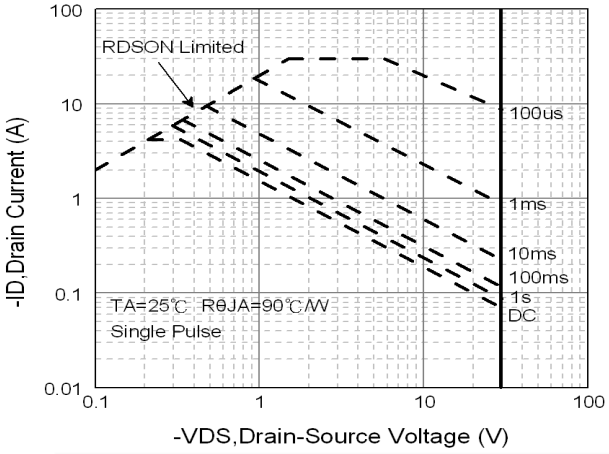

Fig.8 Safe Operating Area

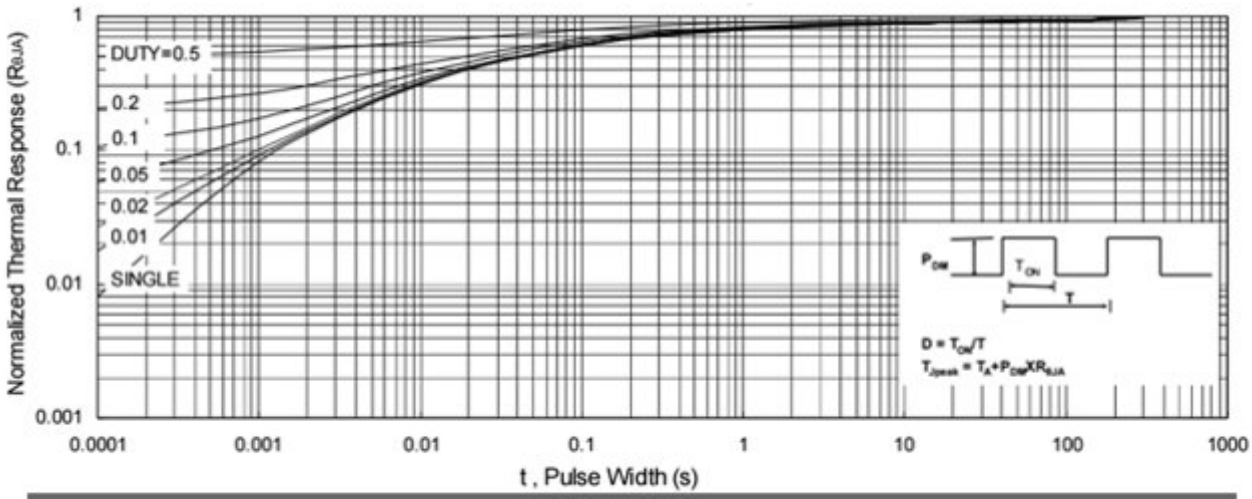

Fig.9 Normalized Maximum Transient Thermal Impedance

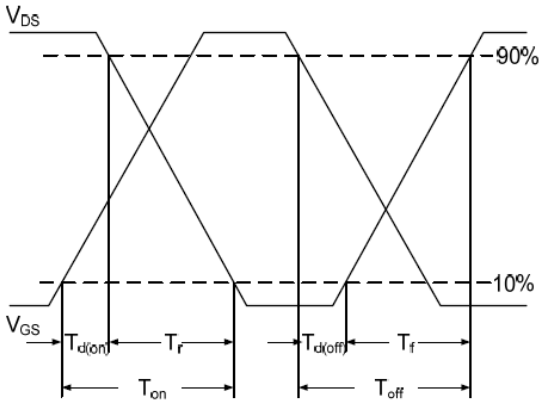

Fig.10 Switching Time Waveform

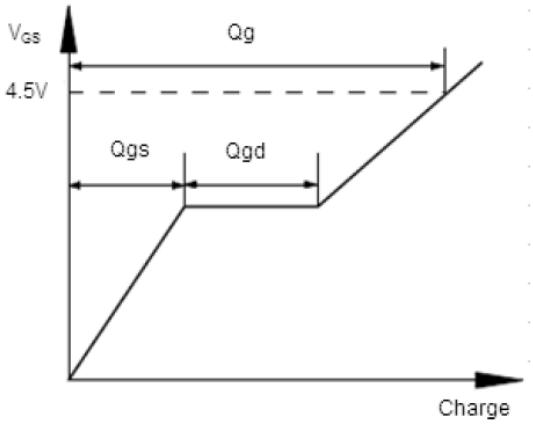

Fig.11 Gate Charge Waveform