



YEA SHIN TECHNOLOGY CO., LTD

YS9435JM

P-Channel Enhancement MOSFET

VDS= -30V, ID= -5.1A



SOP-8

DESCRIPTION

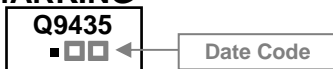
The YS9435JM is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The YS9435JM meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING

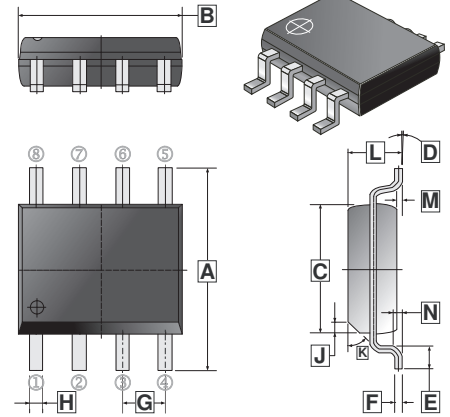


PACKAGE INFORMATION

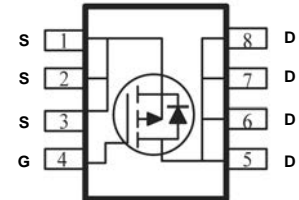
Package	MPQ	Leader Size
SOP-8	4K	13 inch

ORDER INFORMATION

Part Number	Type
YS9435JM	Lead (Pb)-free and Halogen-free



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.				



MAXIMUM RATINGS

Parameter	Symbol	Ratings		Unit
		$t \leq 10\text{sec}$	Steady State	
Drain-Source Voltage	V_{DS}	-30		V
Gate-Source Voltage	V_{GS}	± 20		V
Continuous Drain Current ¹ , @ $V_{GS}=10\text{V}$	$T_A=25^\circ\text{C}$	-5.1	-4.3	A
	$T_A=70^\circ\text{C}$	-4.1	-3.4	
Pulsed Drain Current ³	I_{DM}	-20		A
Power Dissipation	$T_A=25^\circ\text{C}$	2		W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150		$^\circ\text{C}$
Thermal Data				
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	$t \leq 10\text{sec}, 62.5$		$^\circ\text{C/W}$
		Steady State, 89		
Thermal Resistance from Junction-Ambient ²	$R_{\theta JA}$	125		
Thermal Resistance from Junction-Case ¹	$R_{\theta JC}$	25		

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	-30	-	-	V	V _{GS} =0, I _D = -250μA	
Gate Threshold Voltage	V _{GS(th)}	-1	-1.5	-2	V	V _{DS} =V _{GS} , I _D = -250μA	
Forward Transconductance	g _{fs}	-	11	-	S	V _{DS} = -5V, I _D = -4A	
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V	
Drain-Source Leakage Current	I _{DSS}	T _J =25°C	-	-	-1	μA	V _{DS} = -24V, V _{GS} =0
		T _J =55°C	-	-	-5		V _{DS} = -24V, V _{GS} =0
Static Drain-Source On-Resistance ⁴	R _{DS(on)}	-	-	50	mΩ	V _{GS} = -10V, I _D = -4A	
		-	-	75		V _{GS} = -4.5V, I _D = -3A	
Total Gate Charge	Q _g	-	6.4	-	nC	I _D = -4A V _{DS} = -15V V _{GS} = -4.5V	
Gate-Source Charge	Q _{gs}	-	2.3	-			
Gate-Drain ("Miller") Charge	Q _{gd}	-	2	-			
Turn-on Delay Time	T _{d(on)}	-	2.8	-	nS	V _{DD} = -15V I _D = -4A V _{GS} = -10V R _G =3.3Ω	
Rise Time	T _r	-	8.4	-			
Turn-off Delay Time	T _{d(off)}	-	39	-			
Fall Time	T _f	-	6	-			
Input Capacitance	C _{iss}	-	585	-	pF	V _{GS} =0 V _{DS} = -15V f=1MHz	
Output Capacitance	C _{oss}	-	100	-			
Reverse Transfer Capacitance	C _{rss}	-	85	-			
Drain-Source Diode Characteristics							
Continuous Source Current ¹	I _S	-	-	-5.1	A		
Pulsed Source Current ³	I _{SM}	-	-	-20			
Diode Forward Voltage ⁴	V _{SD}	-	-	-1.2	V	V _{GS} =0, I _S = -2.6A T _J =25°C	
Reverse Recovery Time	t _{rr}	-	7.8	-	nS	I _F = -4A dI/dt=100A/μs	
Reverse Recovery Charge	Q _{rr}	-	2.5	-	nC	T _J =25°C	

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, pulse width ≤ 300μs, duty cycle ≤ 2%.
4. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.

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CHARACTERISTIC CURVE

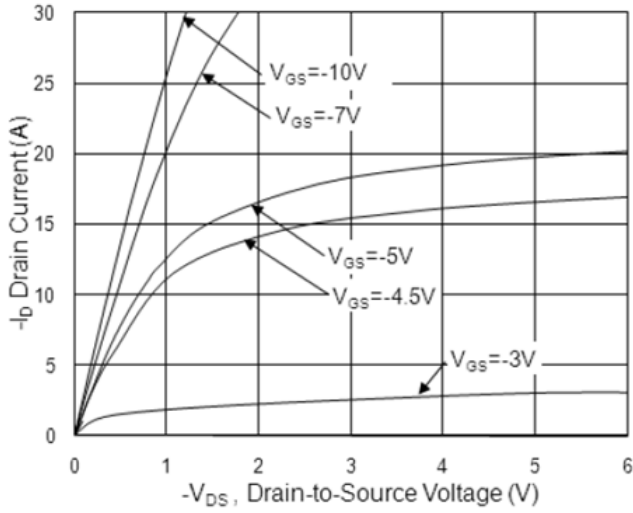


Fig.1 Typical Output Characteristics

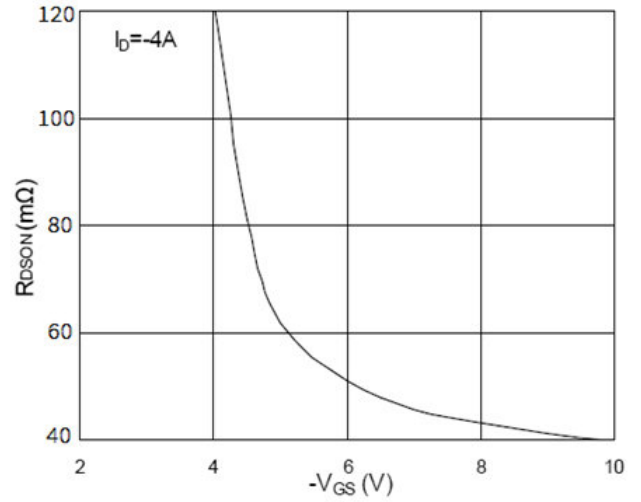


Fig.2 On-Resistance vs. Gate-Source

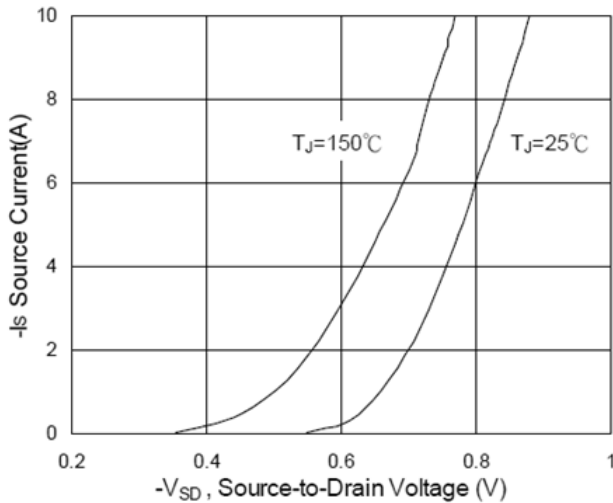


Fig.3 Forward Characteristics of Reverse

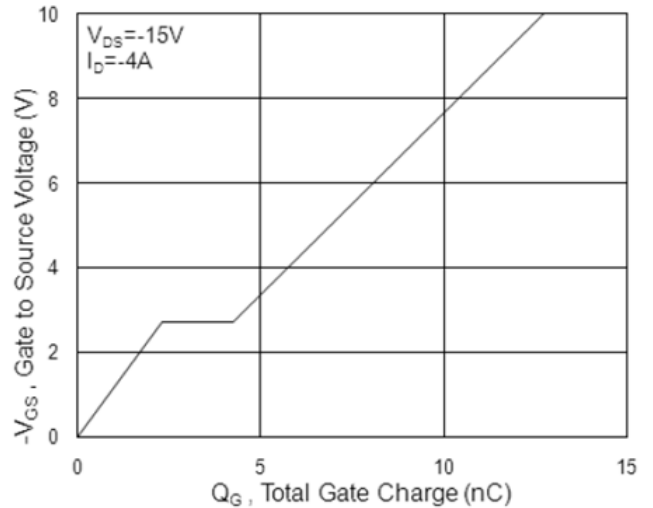


Fig.4 Gate-Charge Characteristics

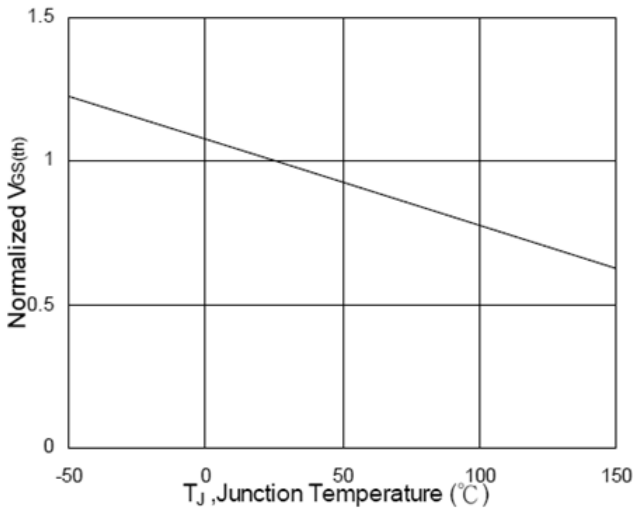


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

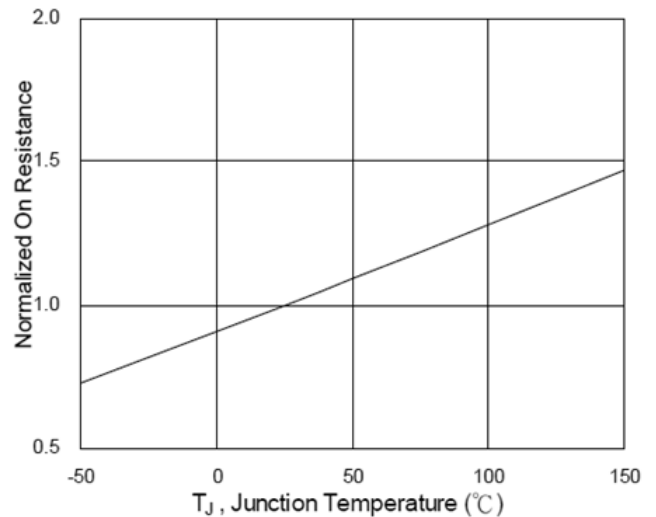


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

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CHARACTERISTIC CURVE

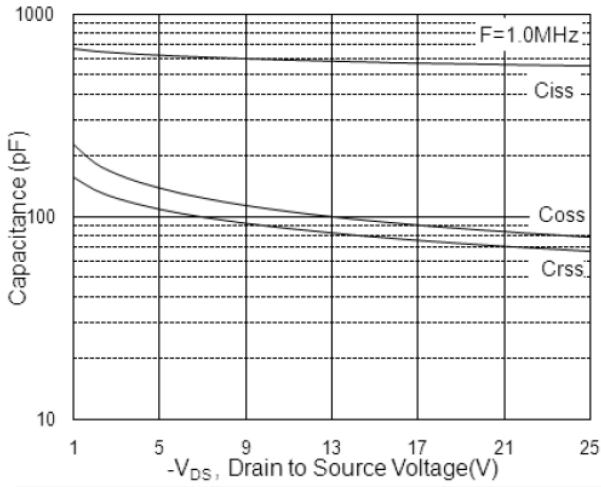


Fig.7 Capacitance

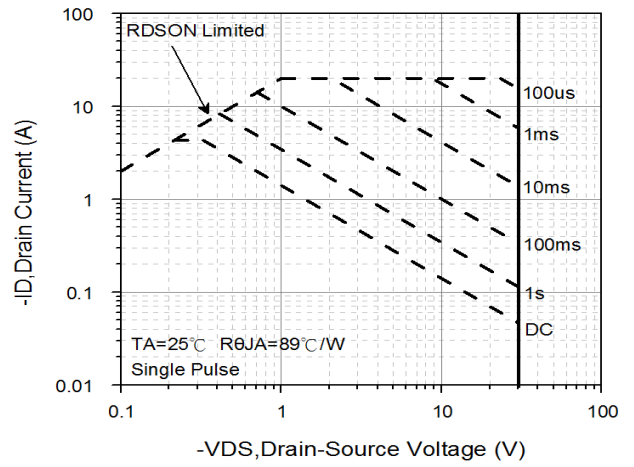


Fig.8 Safe Operating Area

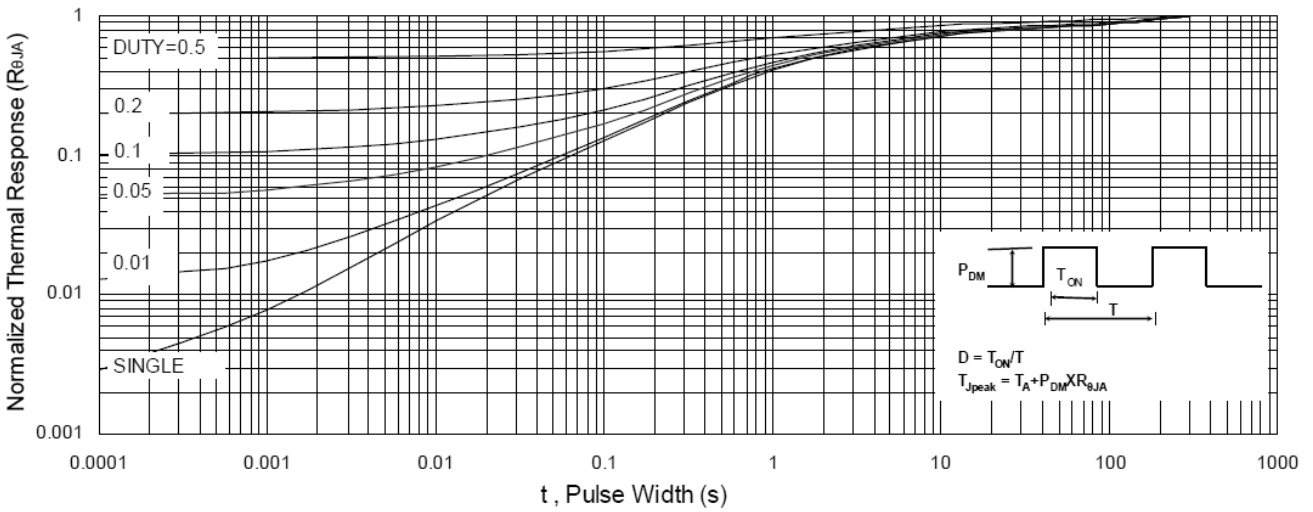


Fig.9 Normalized Maximum Transient Thermal Impedance

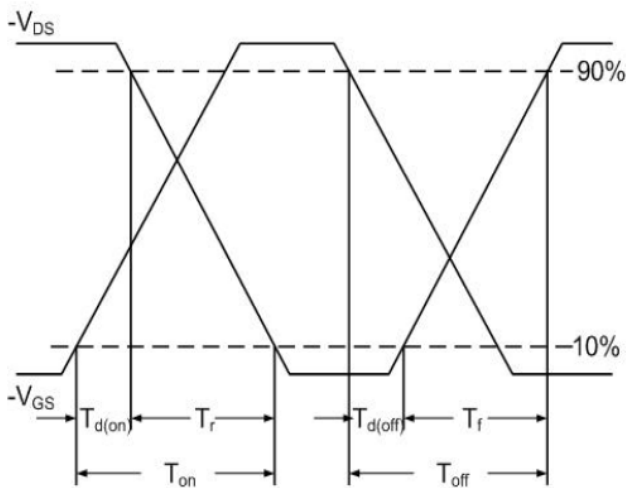


Fig.10 Switching Time Waveform

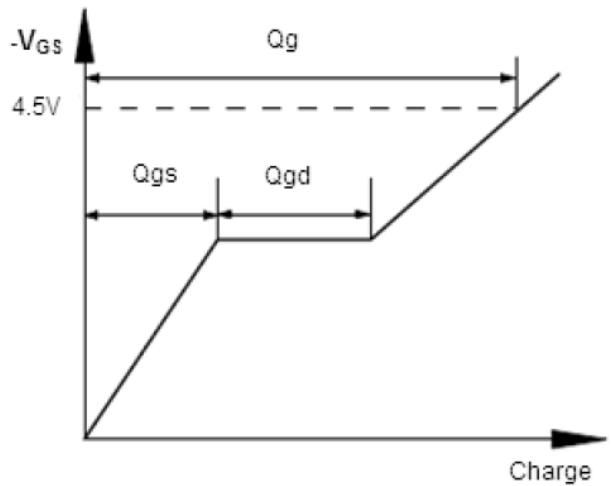


Fig.11 Gate Charge Waveform