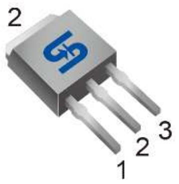

Chipsmall
深圳市津利帝科技有限公司
Geelead Technology Limited
采购部

Pb-Free RoHS COMPLIANT

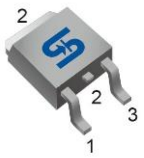
TSM900N06

60V N-Channel Power MOSFET

TO-251S
(IPAK SL)



TO-252
(DPAK)



SOT-223

Pin Definition:
1. Gate
2. Drain
3. Source

Key Parameter Performance

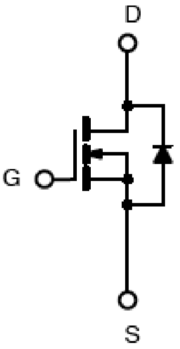
Parameter		Value	Unit
V_{DS}		60	V
$R_{DS(on)}$ (max)	V_{GS} = 10V	90	mΩ
	V_{GS} = 4.5V	100	
Q_g		9.3	nC

Ordering Information

Part No.	Package	Packing
TSM900N06CH X0G	TO-251S	75pcs / Tube
TSM900N06CP ROG	TO-252	2.5kpcs / 13" Reel
TSM900N06CW RPG	SOT-223	2.5kpcs / 13" Reel

Note: "G" denotes for Halogen- and Antimony-free as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds

Block Diagram



N-Channel MOSFET

Absolute Maximum Ratings (Tc = 25°C unless otherwise noted)

Parameter		Symbol	Limit			Unit
			IPAK	DPAK	SOT-223	
Drain-Source Voltage		V_{DS}	60			V
Gate-Source Voltage		V_{GS}	±20			V
Continuous Drain Current (Note 1)	Tc=25°C	I_D	11			A
	Tc=100°C		7			A
Pulsed Drain Current (Note 1)		I_{DM}	44			A
Single Pulse Avalanche Energy (Note 3)		E_{AS}	25			mJ
Single Pulse Avalanche Current (Note 3)		I_{AS}	7			A
Total Power Dissipation	@ T_C=25°C	P_D	25	25	4.17	W
	Derate above T_C=25°C		0.2	0.2	0.014	W/°C
Operating Junction Temperature		T_J	150			°C
Storage Temperature Range		T_{STG}	-55 to +150			°C

Thermal Performance

Parameter	Symbol	Limit			Unit
		IPAK	DPAK	SOT-223	
Thermal Resistance - Junction to Case	$R_{ӨJC}$	5	5	30	°C/W
Thermal Resistance - Junction to Ambient	$R_{ӨJA}$	62	62	70	°C/W

Electrical Specifications (T_C = 25°C unless otherwise noted)

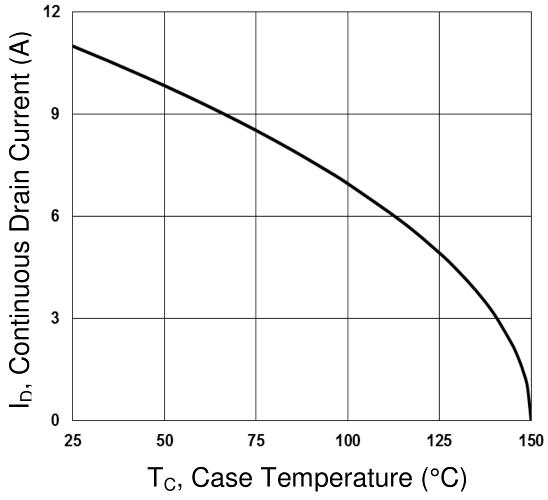
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250µA	BV_{DSS}	60	--	--	V
Drain-Source On-State Resistance	V_{GS} = 10V, I_D = 6A	$R_{DS(ON)}$	--	76	90	mΩ
	V_{GS} = 4.5V, I_D = 3A		--	87	100	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250µA	$V_{GS(TH)}$	1.2	1.8	2.5	V
Zero Gate Voltage Drain Current	V_{DS} = 60V, V_{GS} = 0V	I_{DSS}	--	--	1	µA
	V_{DS} = 48V, T_J = 125°C		--	--	10	
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	µA
Forward Transconductance	V_{DS} = 10V, I_D = 3A	g_{fs}	--	4	--	S
Dynamic						
Total Gate Charge(Note 4,5)	V_{DS} = 48V, I_D = 6A, V_{GS} = 10V	Q_g	--	9.3	--	nC
Gate-Source Charge(Note 4,5)		Q_{gs}	--	2.1	--	
Gate-Drain Charge(Note 4,5)		Q_{gd}	--	1.8	--	
Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	C_{iss}	--	500	--	pF
Output Capacitance		C_{oss}	--	45	--	
Reverse Transfer Capacitance		C_{rss}	--	16	--	
Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	R_g	--	2	--	Ω
Switching						
Turn-On Delay Time(Note 4,5)	V_{DD} = 30V , V_{GS} = 10V , R_G = 3.3Ω, I_D = -1A	$t_{d(on)}$	--	2.9	--	ns
Turn-On Rise Time(Note 4,5)		t_r	--	9.5	--	
Turn-Off Delay Time(Note 4,5)		$t_{d(off)}$	--	18.4	--	
Turn-Off Fall Time(Note 4,5)		t_f	--	5.3	--	
Source-Drain Diode Ratings and Characteristic						
Continuous Drain-Source Diode	V_G = V_D = 0V, Force Current	I_S	--	--	11	A
Pulse Drain-Source Diode		I_{SM}	--	--	44	A
Diode-Source Forward Voltage	V_{GS} = 0V, I_S = 1A	V_{SD}	--	--	1.2	V
Reverse Recovery Time(Note 4)	V_{GS} = 30V, I_S = 1A	t_{rr}	--	23.2	--	ns
Reverse Recovery Charge(Note 4)	dI_F/dt = 100A/µs	Q_{rr}	--	14.3	--	nC

Note:

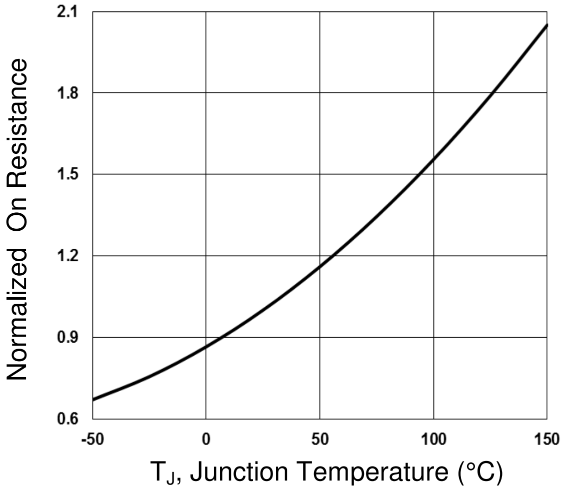
1. Limited by maximum junction temperature.
2. Repetitive Rating : Pulsed width limited by maximum junction temperature.
3. V_{DD}=25V,V_{GS}=10V,L=1mH,I_{AS}=7A.,R_G=25Ω,Starting T_J= 25°C
4. Pulse test: pulse width ≤ 300µs, duty cycle ≤ 2%
5. Essentially independent of operating temperature.

Electrical Characteristics Curve

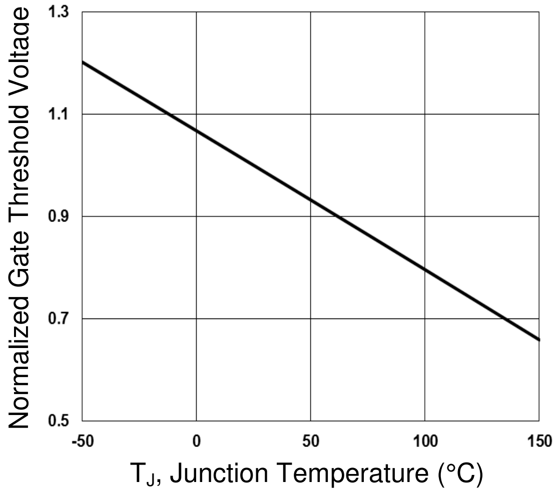
Continuous Drain Current vs. Tc



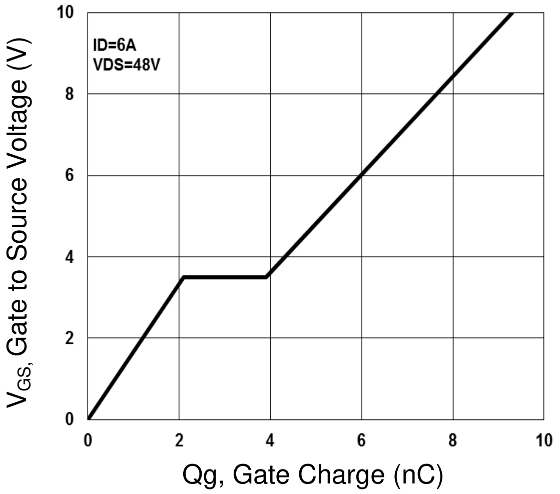
Normalized RDSON vs. T_J



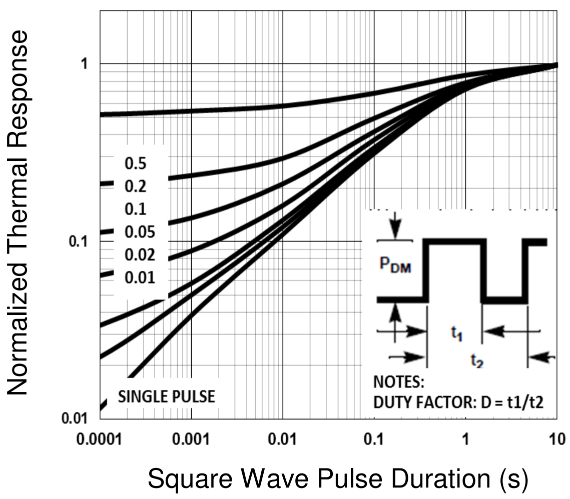
Normalized V_{th} vs. T_J



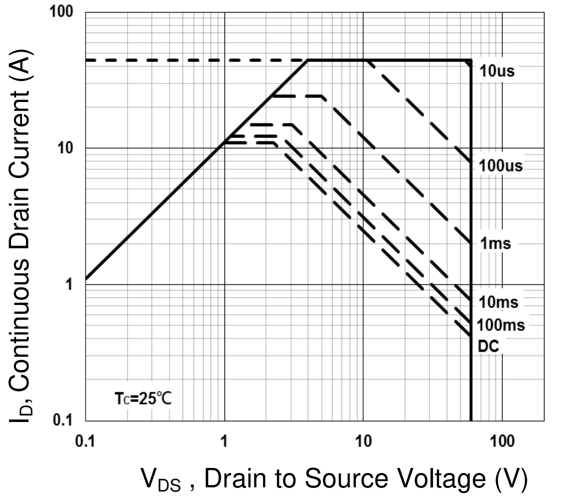
Gate Charge Waveform



Normalized Transient Impedance (TO-251S)

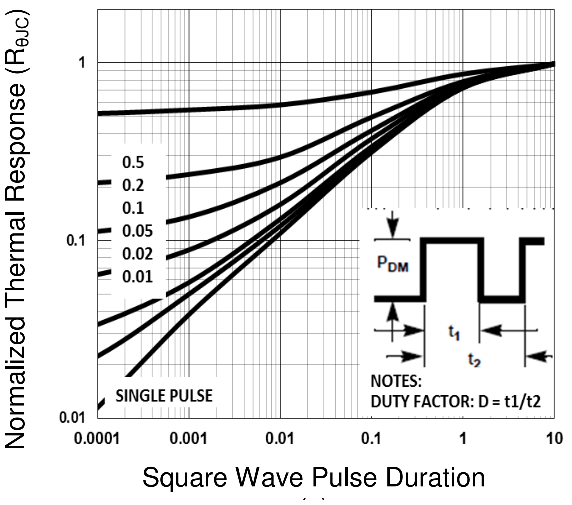


Maximum Safe Operation Area (TO-251S)



Electrical Characteristics Curve (Tc=25°C, unless otherwise noted)

Normalized Transient Impedance (TO-252)



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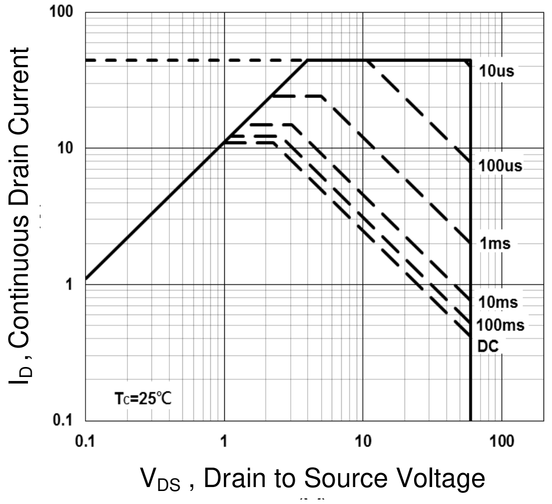
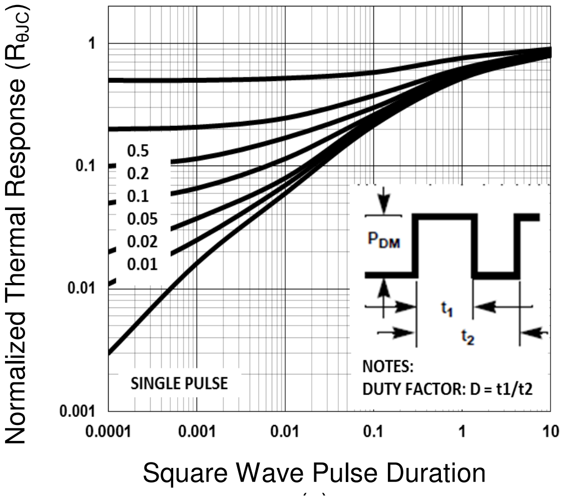


Normalized Transient Impedance (SOT-223)



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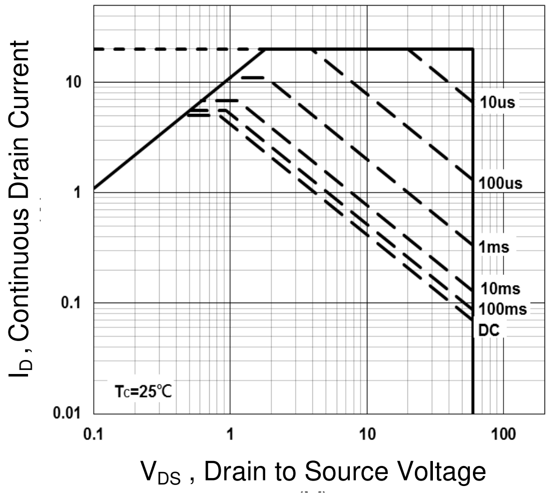
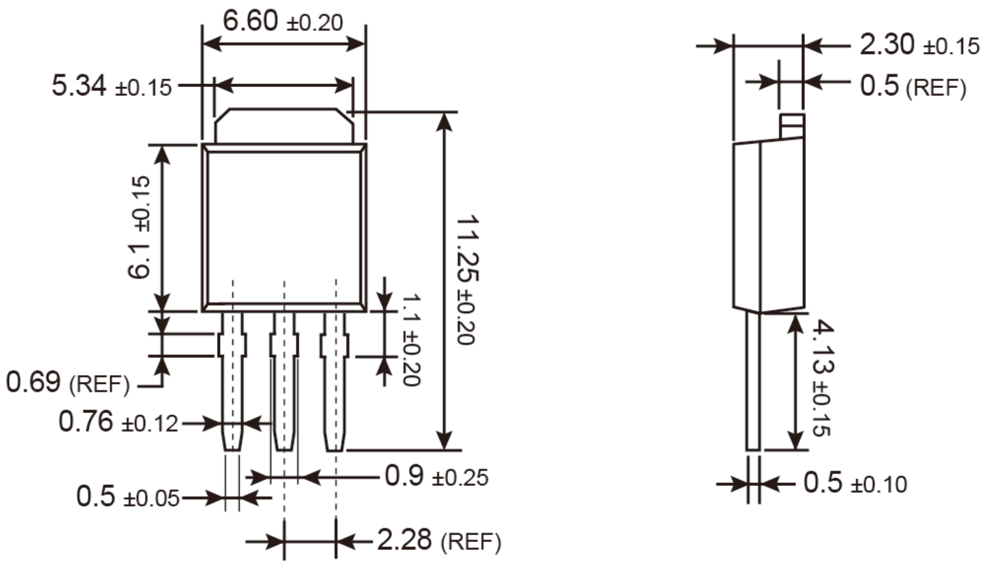
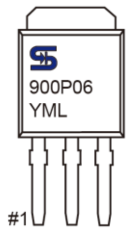


TO-251S Mechanical Drawing



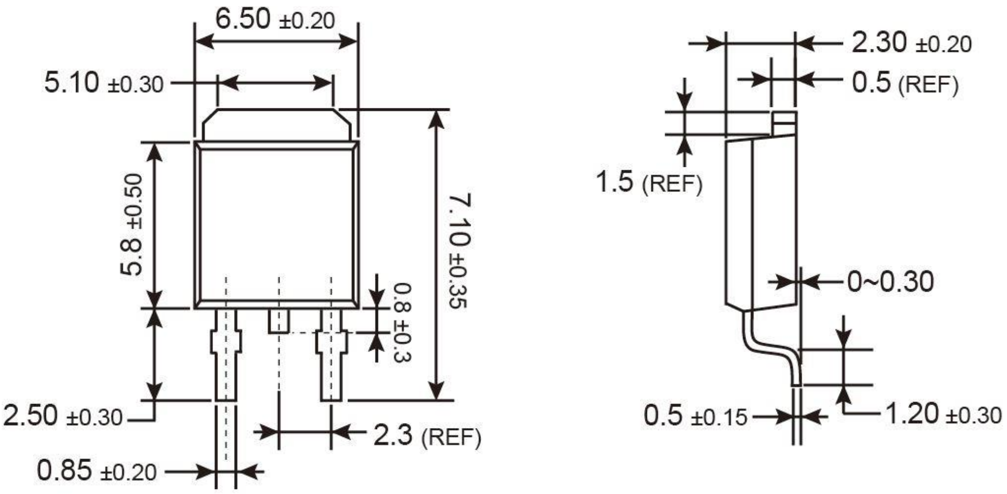
Unit: Millimeters

Marking Diagram



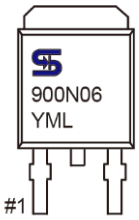
Y = Year Code
M = Month Code for Halogen Free Product
(**O**=Jan, **P**=Feb, **Q**=Mar, **R**=Apl, **S**=May, **T**=Jun, **U**=Jul, **V**=Aug, **W**=Sep, **X**=Oct, **Y**=Nov, **Z**=Dec)
L = Lot Code

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



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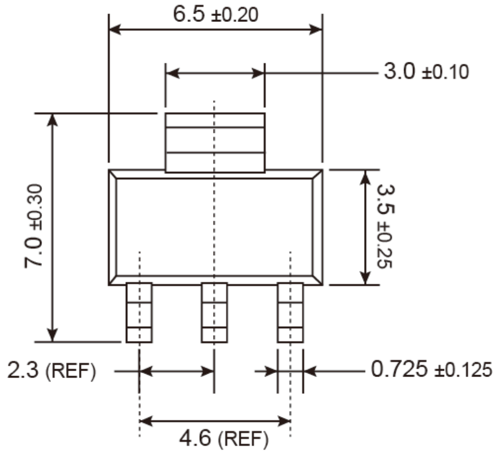

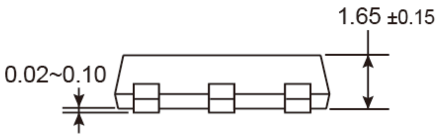

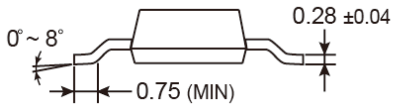

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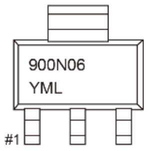

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Notice