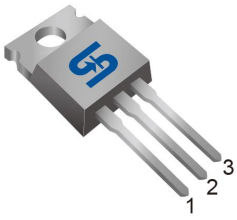
TAIWAN SEMICONDUCTOR

TSM340N06

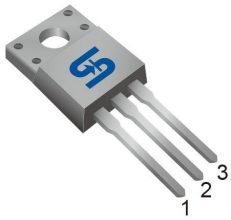
60V N-Channel Power MOSFET

Pb-Free RoHS COMPLIANT

TO-220



ITO-220

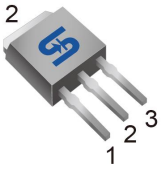


Pin Definition:
1. Gate
2. Drain
3. Source

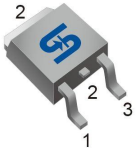
Key Parameter Performance

Parameter		Value	Unit
V_{DS}		60	V
$R_{DS(on)}$ (max)	V_{GS} = 10V	34	mΩ
	V_{GS} = 4.5V	40	
Q_g		16.6	nC

TO-251S (IPAK)



TO-252 (DPAK)

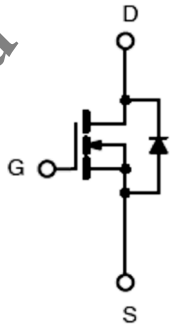


Ordering Information

Part No.	Package	Packing
TSM340N06CI C0G	ITO-220	50pcs / Tube
TSM340N06CZ C0G	TO-220	50pcs / Tube
TSM340N06CH X0G	TO-251S	75pcs / Tube
TSM340N06CP ROG	TO-252	2.5kpcs / 13òReel

Note: ñGòdenotes 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

TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

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

Parameter		Symbol	Limit			Unit
			IPAK/DPAK	ITO-220	TO-220	
Drain-Source Voltage		V_{DS}	60			V
Gate-Source Voltage		V_{GS}	±20			V
Continuous Drain Current (Note 1)	Tc = 25°C	I_D	30			A
	Tc = 100°C		19			A
Pulsed Drain Current (Note 2)		I_{DM}	120			A
Single Pulse Avalanche Energy (Note 3)		E_{AS}	24			mJ
Single Pulse Avalanche Current (Note 2)		I_{AS}	22			A
Total Power Dissipation @ T_C = 25°C		P_D	40	27	66	W
Operating Junction Temperature		T_J	150			°C
Storage Temperature Range		T_{STG}	-55 to +150			°C

TSM340N06

60V N-Channel Power MOSFET

Thermal Performance

Parameter	Symbol	Limit			Unit
		IPAK/DPAK	ITO-220	TO-220	
Thermal Resistance - Junction to Case	$R_{\theta JC}$	3.1	4.7	1.9	°C/W
Thermal Resistance - Junction to Ambient	$R_{\theta JA}$	62			°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 = 15A	$R_{DS(ON)}$	--	28	34	mq
	V_{GS} = 4.5V, I_D = 10A		--	33	40	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250µA	$V_{GS(TH)}$	1.2	1.7	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	nA
Forward Transconductance	V_{DS} = 10V, I_D = 8A	g_{fs}	--	8	--	S
Dynamic						
Total Gate Charge (Note 4,5)	V_{DS} = 30V, I_D = 20A, V_{GS} = 10V	Q_g	--	16.6	--	nC
Gate-Source Charge (Note 4,5)		Q_{gs}	--	2.2	--	
Gate-Drain Charge (Note 4,5)		Q_{gd}	--	3.9	--	
Input Capacitance	V_{DS} = 30V, V_{GS} = 0V, f = 1MHz	C_{iss}	--	1180	--	pF
Output Capacitance		C_{oss}	--	68	--	
Reverse Transfer Capacitance		C_{rss}	--	45	--	
Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	R_g	--	2.1	--	q
Switching						
Turn-On Delay Time (Note 4,5)	V_{DD}=30V , V_{GS}=10V , R_G=6Ω, I_D=-1A	$t_{d(on)}$	--	4.6	--	ns
Turn-On Rise Time (Note 4,5)		t_r	--	14.8	--	
Turn-Off Delay Time (Note 4,5)		$t_{d(off)}$	--	27.2	--	
Turn-Off Fall Time (Note 4,5)		t_f	--	7.8	--	
Source-Drain Diode Ratings and Characteristic						
Continuous Drain-Source Diode	V_G=V_D=0V , Force Current	I_S	--	--	25	A
Pulse Drain-Source Diode		I_{SM}	--	--	100	A
Diode-Source Forward Voltage	V_{GS} = 0V, I_S = 1A	V_{SD}	--	--	1	V
Reverse Recovery Time (Note 4)	V_{GS} = 0V, I_S = 1A dI$_F$/dt = 100A/µs	t_{rr}	--	17	--	ns
Reverse Recovery Charge (Note 4)		Q_{rr}	--	12	--	nC

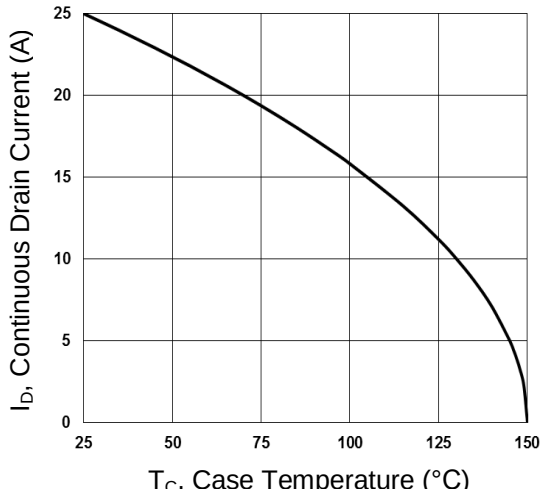
TSM340N06CT C0G
TSM340N06CZ C0G
Not Recommended

Note:

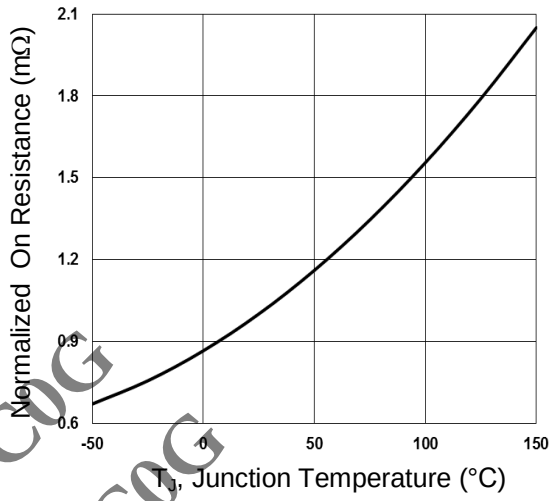
1. Limited by maximum junction temperature
2. Pulse width limited by safe operating area
3. L = 0.1mH, I_{AS} = 22A, V_{DD} = 50V, R_G = 25q , Starting T_J = 25°C
4. Pulse test: pulse width Ò300µs, duty cycle Ò2%
5. Switching time is essentially independent of operating temperature.

Electrical Characteristics Curve

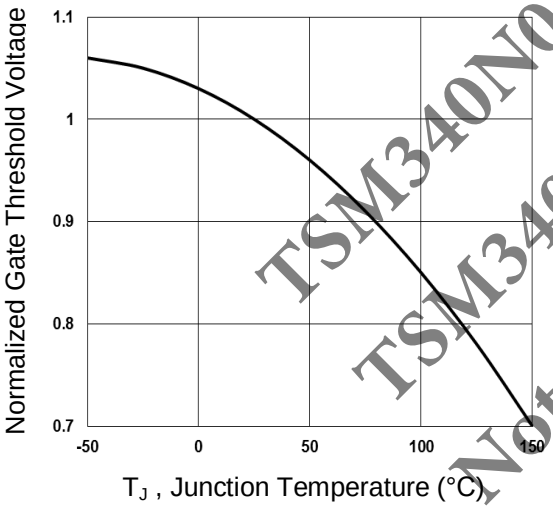
Continuous Drain Current vs. Tc



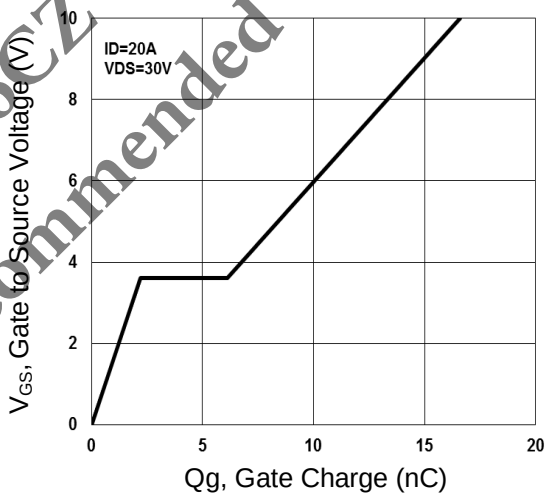
Normalized RDSON vs. T_J



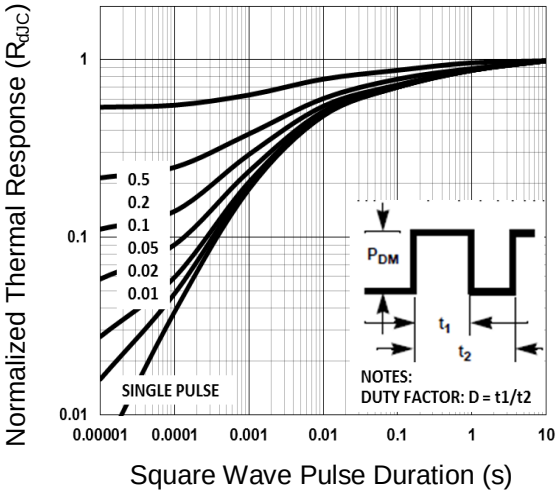
Normalized V_{th} vs. T_J



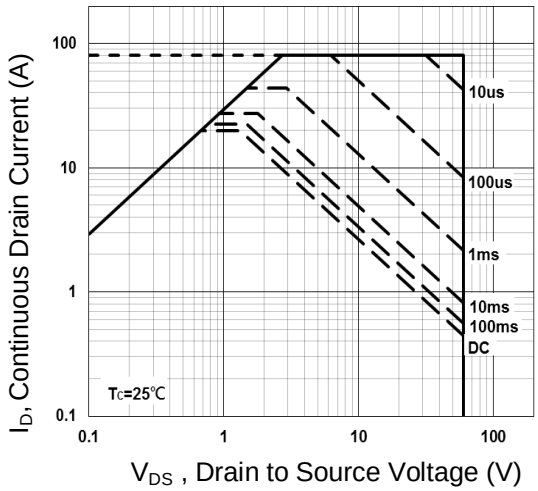
Gate Charge Waveform



Normalized Transient Impedance (ITO-220)



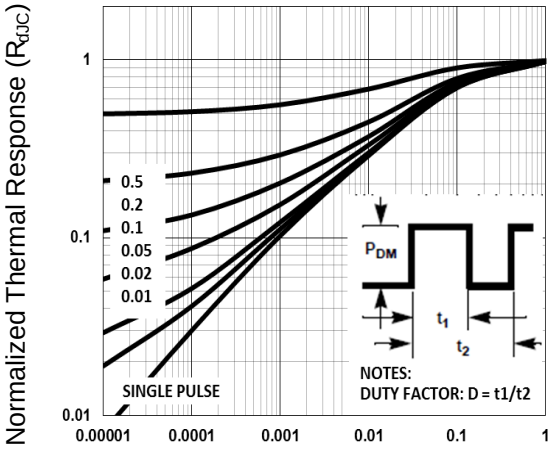
Maximum Safe Operation Area (ITO-220)



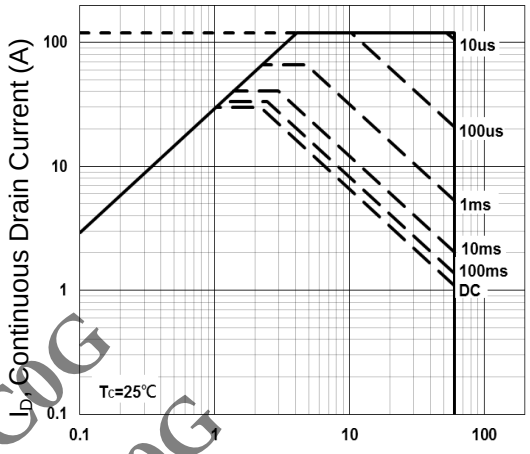
TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

Electrical Characteristics Curve

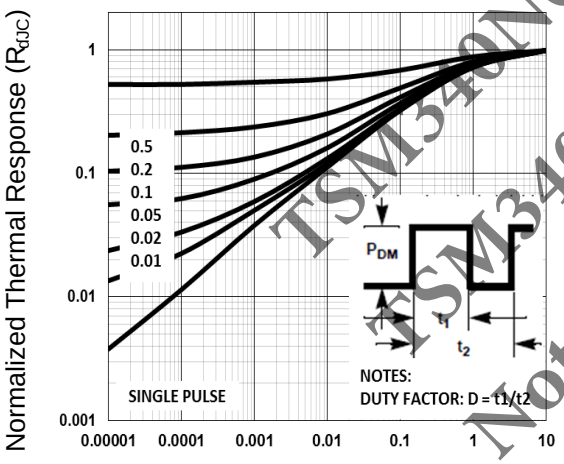
Normalized Transient Impedance (TO-220)



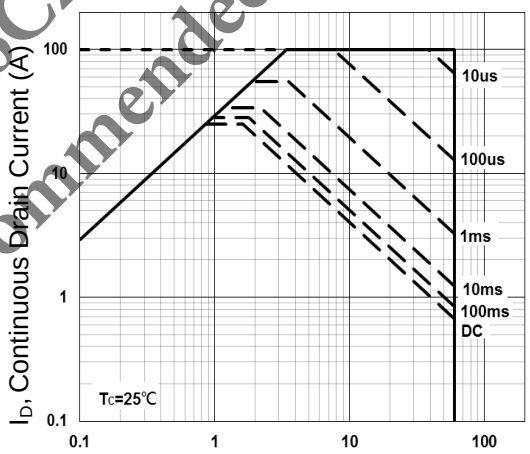
Maximum Safe Operation Area (TO-220)



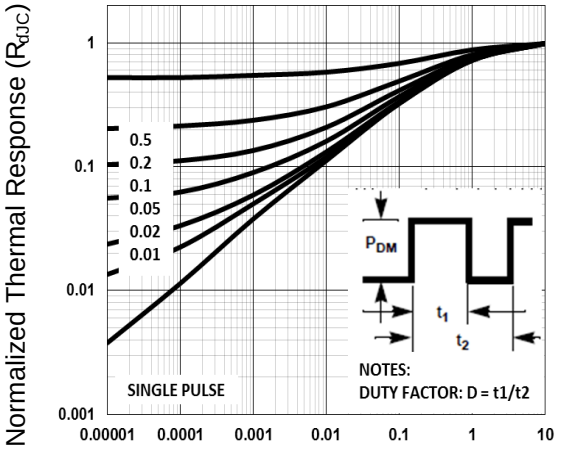
Normalized Transient Impedance (TO-251S)



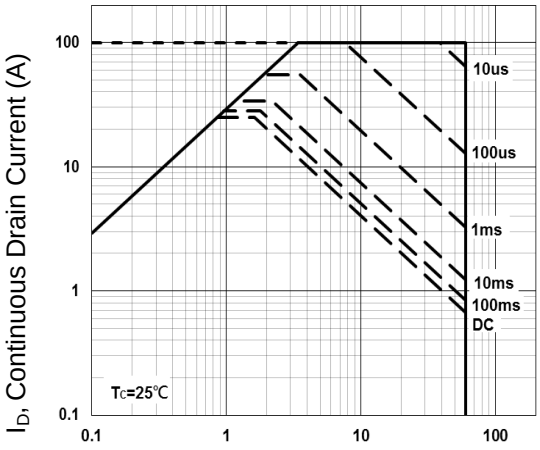
Maximum Safe Operation Area (TO-251S)



Normalized Transient Impedance (TO-252)

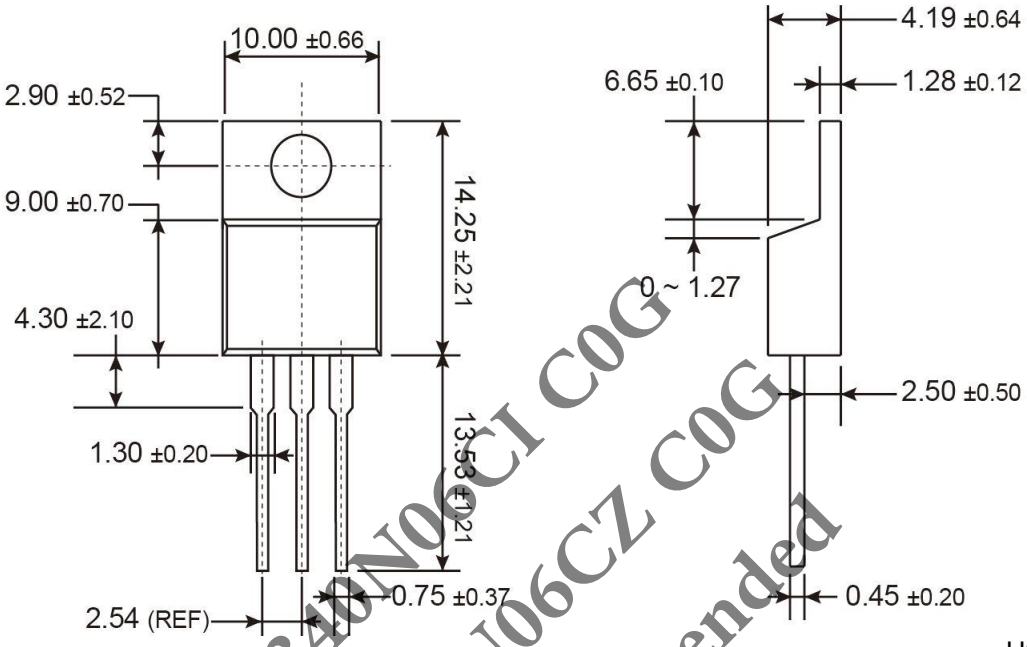


Maximum Safe Operation Area (TO-252)



TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

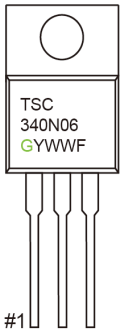
TO-220 Mechanical Drawing



Unit: Millimeters

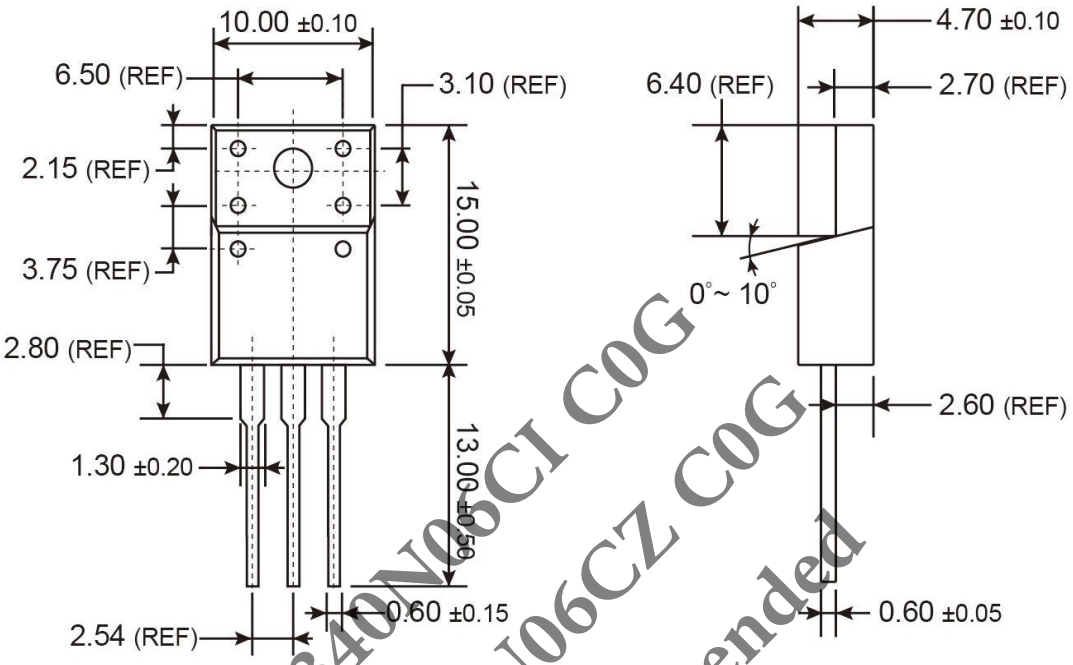
TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

Marking Diagram



G = Halogen Free
Y = Year Code
WW = Week Code (01~52)
F = Factory Code

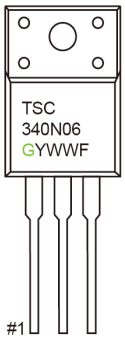
ITO-220 Mechanical Drawing



Unit: Millimeters

TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

Marking Diagram

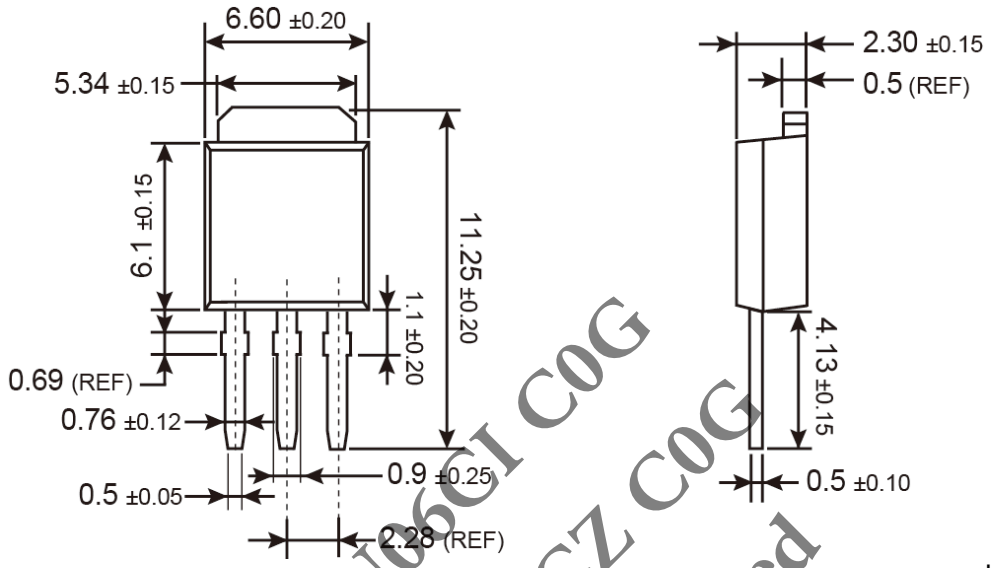


G = Halogen Free
Y = Year Code
WW = Week Code (01~52)
F = Factory Code

TSM340N06

60V N-Channel Power MOSFET

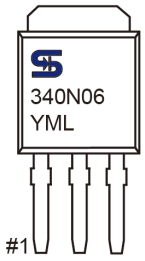
TO-251S Mechanical Drawing



Unit: Millimeters

TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

Marking Diagram

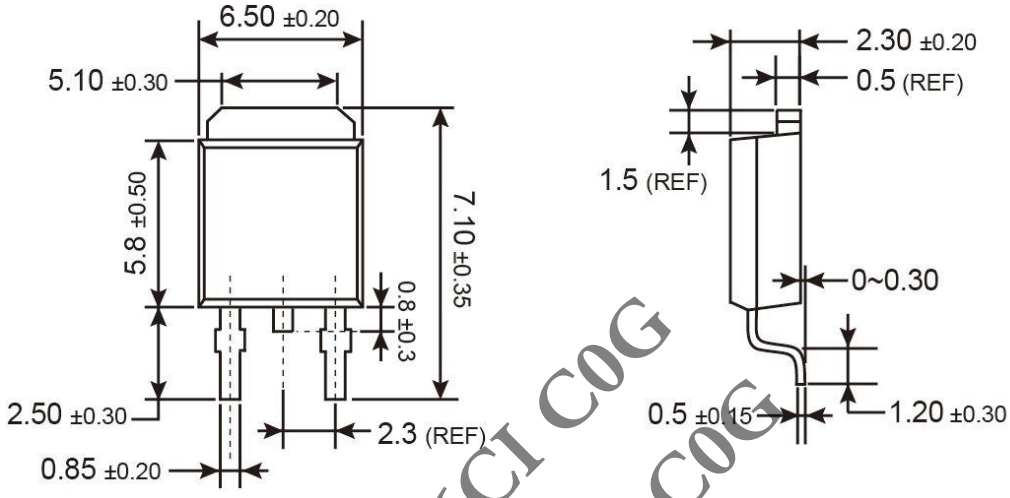


Y = Year Code

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

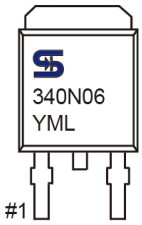
TO-252 Mechanical Drawing



Unit: Millimeters

TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

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

TSM340N06CI C0G
TSM340N06CZ C0G
Not Recommended

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