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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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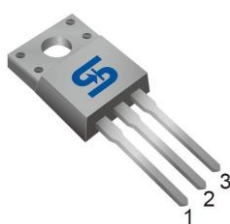
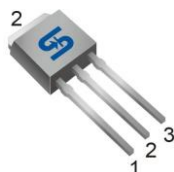
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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



TSM60N900

600V, 4.5A, 0.9Ω
N-Channel Power MOSFET

ITO-220

**TO-251
(IPAK)**

Pin Definition:

1. Gate
2. Drain
3. Source

Key Parameter Performance

Parameter	Value	Unit
V_{DS}	600	V
$R_{DS(on)}$ (max)	0.9	Ω
Q_g	9.7	nC

**TO-252
(DPAK)**


Features

- Super-Junction technology
- High performance due to small figure-of-merit
- High ruggedness performance
- High commutation performance

Application

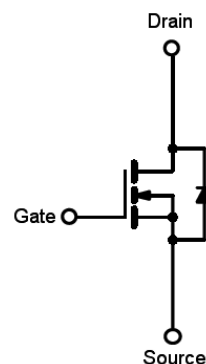
- Power Supply.
- Lighting

Ordering Information

Part No.	Package	Packing
TSM60N900CI C0G	ITO-220	50pcs / Tube
TSM60N900CH C5G	TO-251	75pcs / Tube
TSM60N900CP ROG	TO-252	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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit		Unit
		ITO-220	IPAK/DPAK	
Drain-Source Voltage	V_{DS}	600		V
Gate-Source Voltage	V_{GS}	±30		V
Continuous Drain Current ^(Note 1)	I_D	4.5		A
Pulsed Drain Current ^(Note 2)	I_{DM}	13.5		A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_{DTOT}	20	50	W
Single Pulsed Avalanche Energy ^(Note 3)	E_{AS}	81		mJ
Single Pulsed Avalanche Current ^(Note 3)	I_{AS}	1.8		A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to +150		°C

Thermal Performance

Parameter	Symbol	Limit		Unit
		ITO-220	IPAK/DPAK	
Junction to Case Thermal Resistance	$R_{\theta JC}$	6.25	2.5	°C/W
Junction to Ambient Thermal Resistance	$R_{\theta JA}$	62		°C/W

Electrical Specifications ($T_C = 25^\circ\text{C}$ unless otherwise noted)

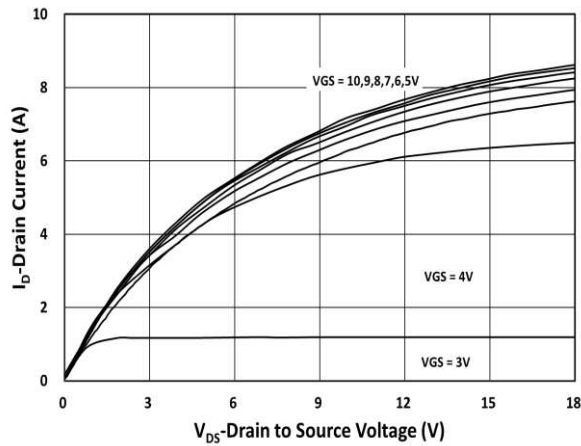
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static ^(Note 4)						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	BV _{DSS}	600	--	--	V
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	V _{GS(TH)}	2	3	4	V
Gate Body Leakage	V _{GS} = ±30V, V _{DS} = 0V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} = 600V, V _{GS} = 0V	I _{DSS}	--	--	1	μA
Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 2.3A	R _{DS(ON)}	--	0.72	0.9	Ω
Dynamic ^(Note 5)						
Total Gate Charge	V _{DS} = 380V, I _D = 2.3A, V _{GS} = 10V	Q _g	--	9.7	--	nC
Gate-Source Charge		Q _{gs}	--	2.3	--	
Gate-Drain Charge		Q _{gd}	--	3.6	--	
Input Capacitance	V _{DS} = 100V, V _{GS} = 0V, f = 1.0MHz	C _{iss}	--	480	--	pF
Output Capacitance		C _{oss}	--	36	--	
Gate Resistance	f=1MHz, open drain	R _g	--	3.4	--	Ω
Switching ^(Note 6)						
Turn-On Delay Time	V _{DD} = 380V, R _{GEN} = 4.7Ω, I _D = 2.3A, V _{GS} = 10V,	t _{d(on)}	--	12	--	ns
Turn-On Rise Time		t _r	--	16	--	
Turn-Off Delay Time		t _{d(off)}	--	22	--	
Turn-Off Fall Time		t _f	--	12	--	
Source-Drain Diode ^(Note 4)						
Forward On Voltage	I _S =4.5A, V _{GS} =0V	V _{SD}	--	--	1.4	V
Reverse Recovery Time	V _R =200V, I _S =2.3A dI _F /dt=100A/μs	t _{rr}	--	179	--	ns
Reverse Recovery Charge		Q _{rr}	--	1.2	--	μC

Notes:

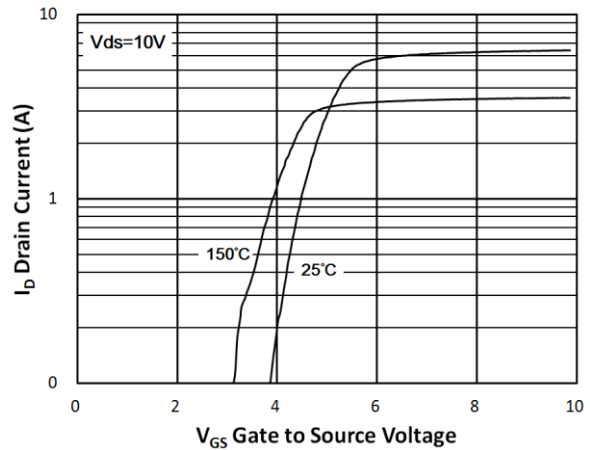
- Current limited by package
- Pulse width limited by the maximum junction temperature
- $L = 50mH, I_{AS} = 1.8A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
- Pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$
- For DESIGN AID ONLY, not subject to production testing.
- Switching time is essentially independent of operating temperature.

Electrical Characteristics Curves

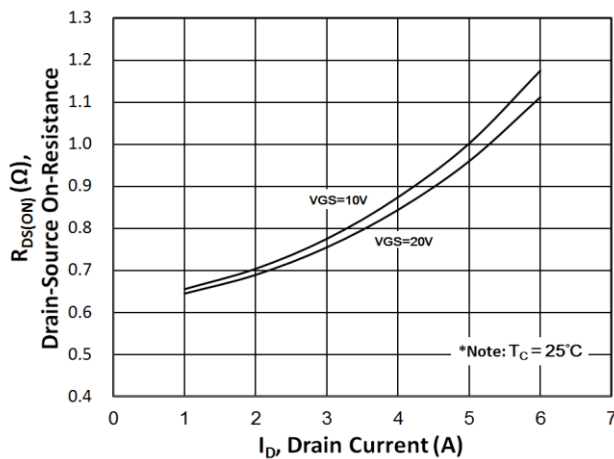
Output Characteristics



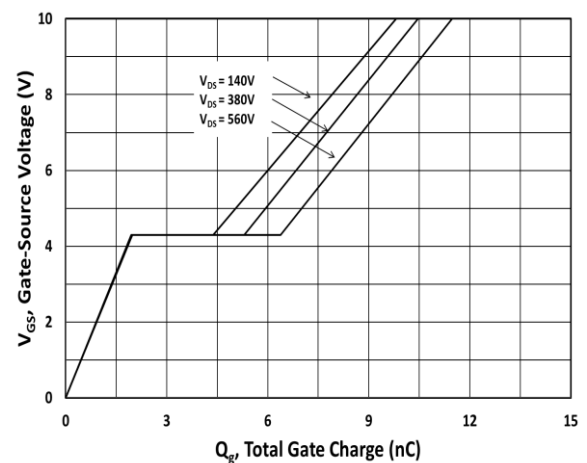
Transfer Characteristics



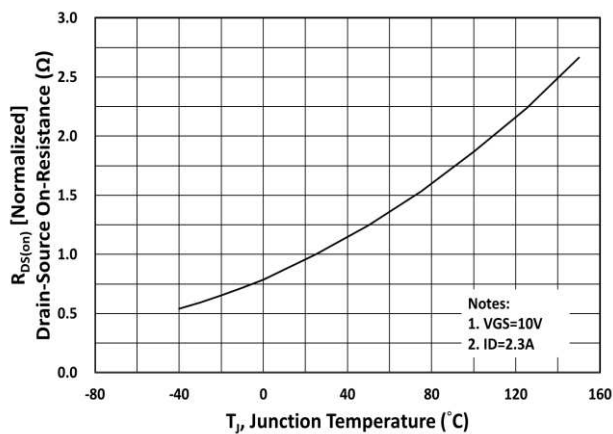
On-Resistance vs. Drain Current



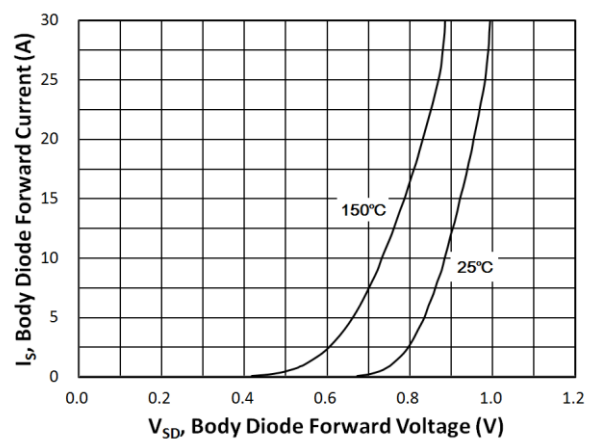
Gate Charge vs. Gate-Source Voltage



On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage vs. Current

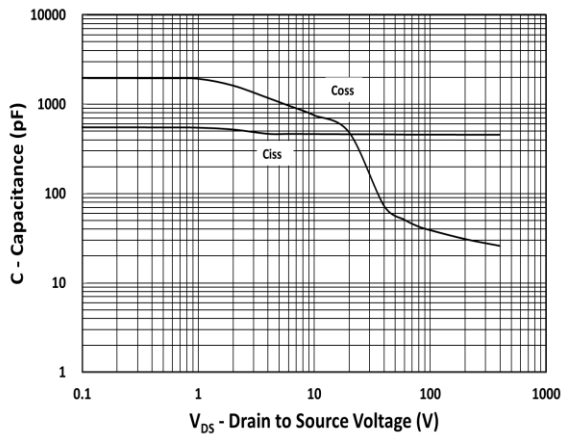


TSM60N900

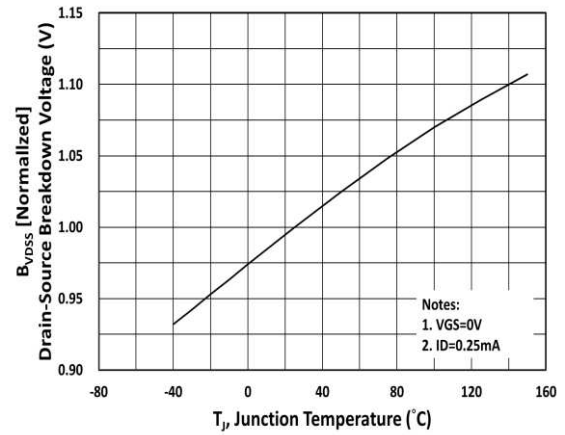
600V, 4.5A, 0.9Ω
N-Channel Power MOSFET

Electrical Characteristics Curves

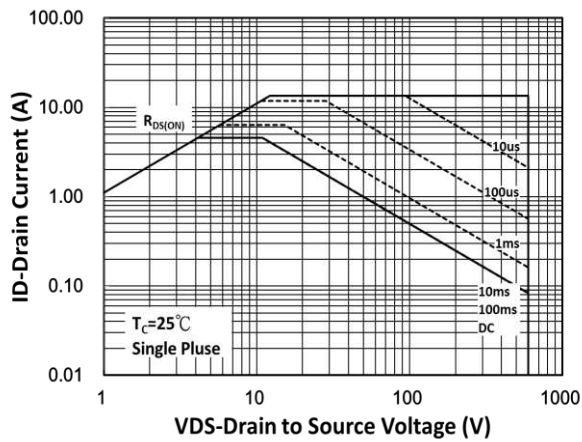
Capacitance vs. Drain-Source Voltage



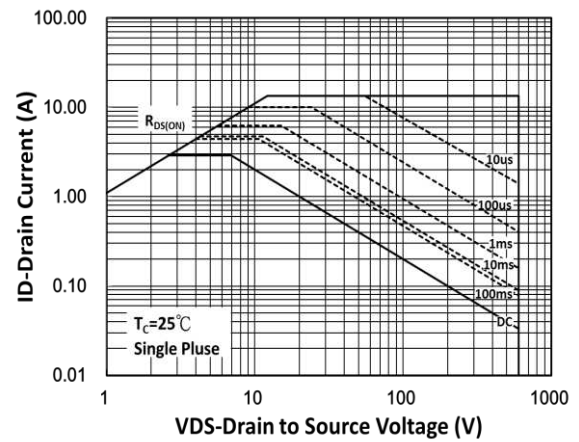
BV_{DSS} vs. Junction Temperature



Maximum Safe Operating Area (DPAK/IPAK)

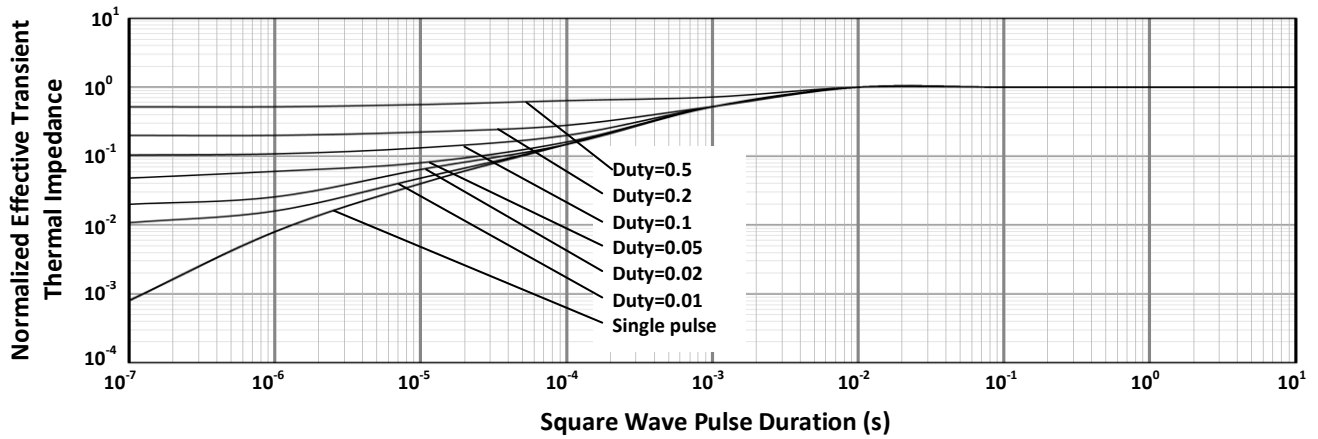


Maximum Safe Operating Area (ITO-220)

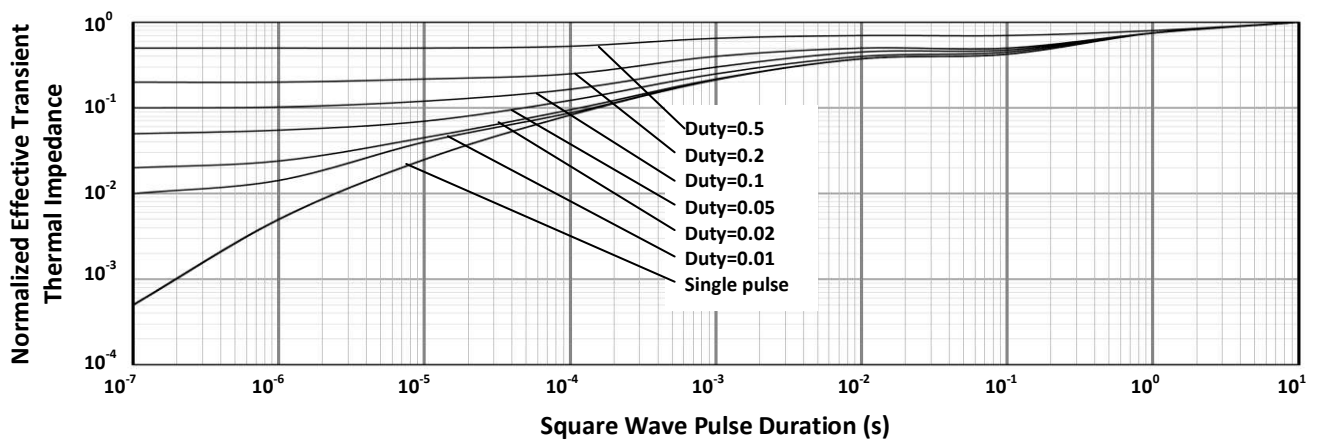


Electrical Characteristics Curves

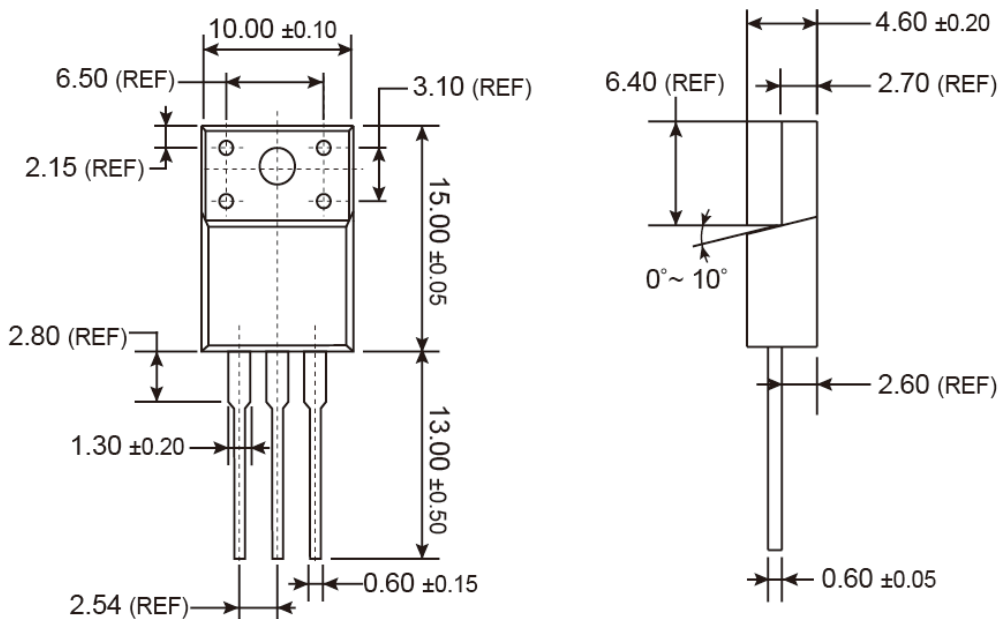
Normalized Thermal Transient Impedance, Junction-to-Case (DPAK/IPAK)



Normalized Thermal Transient Impedance, Junction-to-Case (ITO-220)

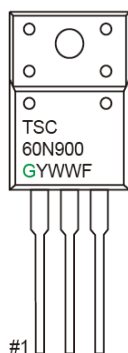


ITO-220 Mechanical Drawing



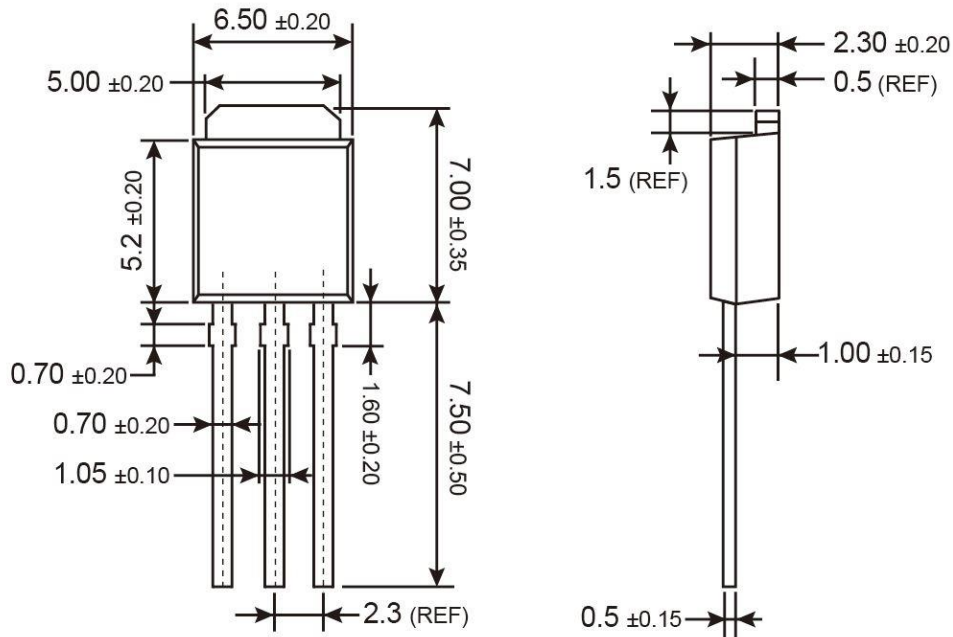
Unit: Millimeters

Marking Diagram



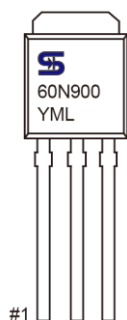
G = Halogen Free
Y = Year Code
WW = Week Code (01~52)
F = Factory Code

TO-251 (IPAK) Mechanical Drawing



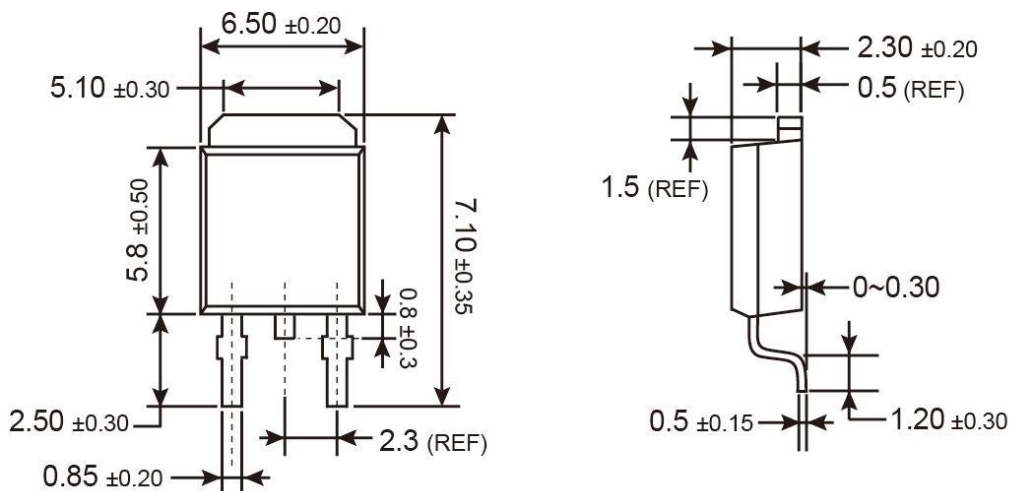
Unit: Millimeters

Marking Diagram



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

TO-252 (DPAK) Mechanical Drawing



Unit: Millimeters

Marking Diagram



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