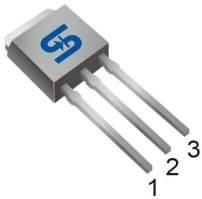
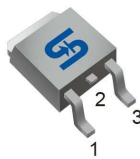




TO-251
(IPAK)



TO-252
(DPAK)



Pin Definition:

1. Gate
2. Drain
3. Source

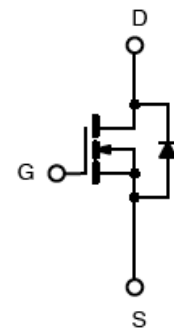
PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
500	0.85 @ $V_{GS}=10V$	7.2

Features

- Low On-Resistance.
- High power and current handing capability.

Block Diagram



N-Channel MOSFET

Ordering Information

Part No.	Package	Packing
TSM8N50CH C5G	TO-251	75pcs / Tube
TSM8N50CP ROG	TO-252	2.5Kpcs / 13" Reel

Note: "G" denotes for Halogen Free

Absolute Maximum Rating ($T_c = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	$T_c = 25^\circ C$	7.2
		$T_c = 100^\circ C$	4.3
Pulsed Drain Current ^(Note 1)	I_{DM}	28.8	A
Single Pulse Avalanche Energy ^(Note 2)	E_{AS}	181	mJ
Total Power Dissipation @ $T_c = 25^\circ C$	P_{TOT}	89	W
Operating Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ C$

Note1: Repetitive Rating : Pulse width limited by maximum junction temperature.

Note2: $L = 7mH$, $I_{AS} = 7.2A$, $V_{DD} = 50V$, Starting $T_J = 25^\circ C$

Thermal Performance

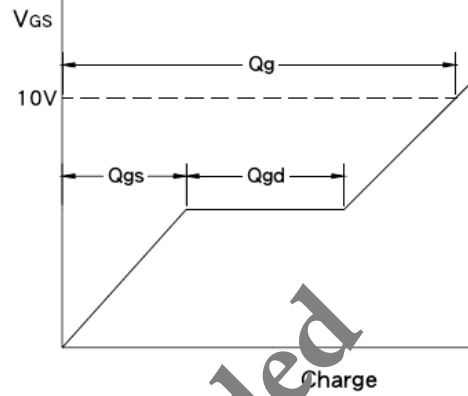
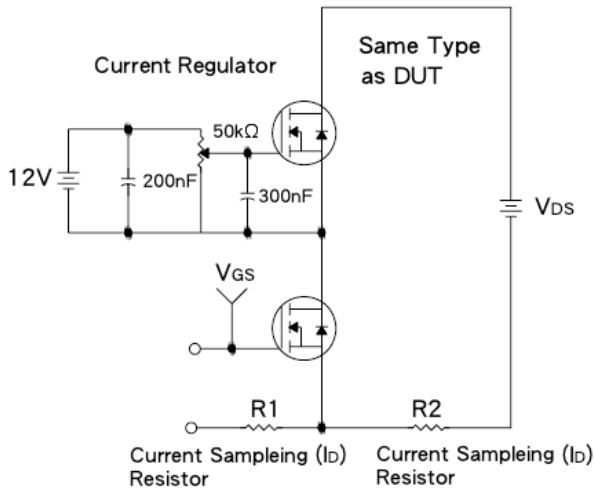
Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Case	$R_{\theta_{JC}}$	1.4	$^\circ C/W$
Thermal Resistance - Junction to Ambient	$R_{\theta_{JA}}$	50	

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

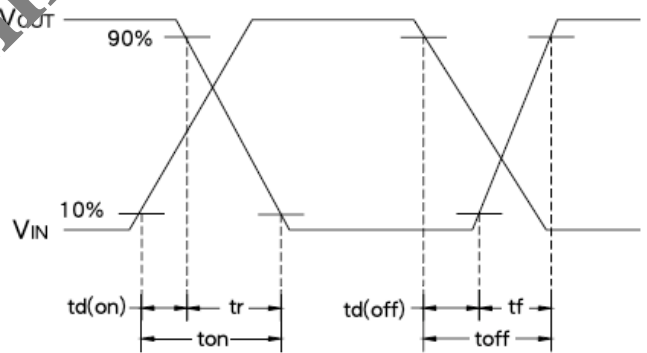
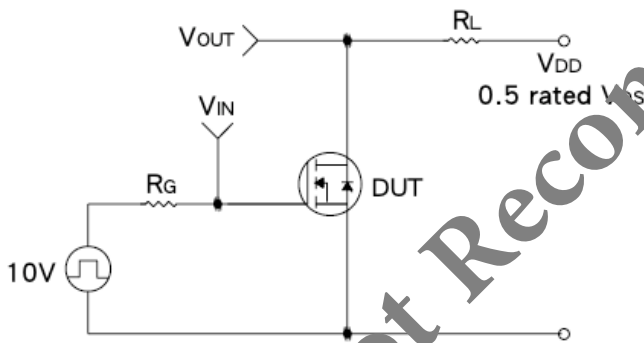
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	BV _{DSS}	500	--	--	V
Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 3.6A	R _{DS(ON)}	--	0.7	0.85	Ω
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	V _{GS(TH)}	2.0	3.0	4.0	V
Zero Gate Voltage Drain Current	V _{DS} = 500V, V _{GS} = 0V	I _{DSS}	--	--	1	uA
Gate Body Leakage	V _{GS} = ±30V, V _{DS} = 0V	I _{GSS}	--	--	±100	nA
Dynamic (Note a)						
Total Gate Charge	V _{DD} = 400V, I _D = 7A, V _{GS} = 10V	Q _g	--	26.6	--	nC
Gate-Source Charge		Q _{gs}	--	5.4	--	
Gate-Drain Charge		Q _{gd}	--	6.82	--	
Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	C _{iss}	--	1595	--	pF
Output Capacitance		C _{oss}	--	127.4	--	
Reverse Transfer Capacitance		C _{rss}	--	14.5	--	
Switching (Note a)						
Turn-On Delay Time	V _{GS} = 10V, I _D = 7A, V _{DD} = 250V, R _{GEN} = 9.1Ω	t _{d(on)}	--	22	--	nS
Turn-On Rise Time		t _r	--	6.8	--	
Turn-Off Delay Time		t _{d(off)}	--	42	--	
Turn-Off Fall Time		t _f	--	4.8	--	
Source-Drain Diode Ratings and Characteristic						
Source Current		I _S	--	--	7	A
Diode Forward Voltage	I _S = 7A, V _{GS} = 0V	V _{SD}	--	--	1.5	V

Note a: Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%.

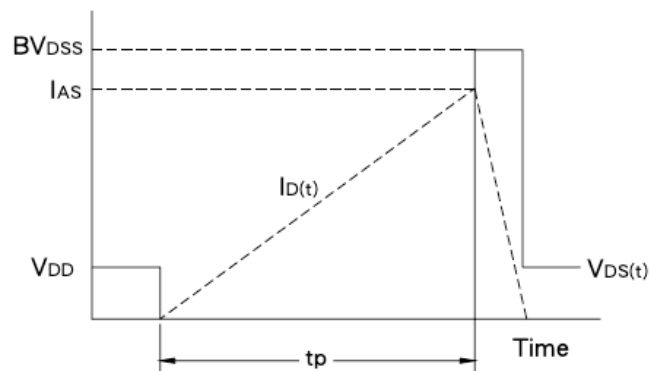
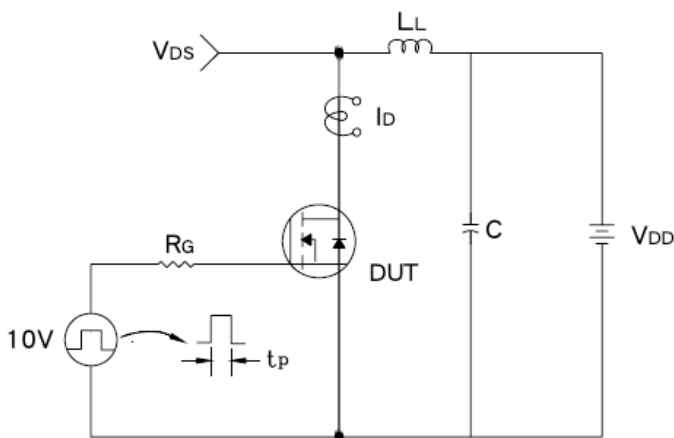
Gate Charge Test Circuit & Waveform



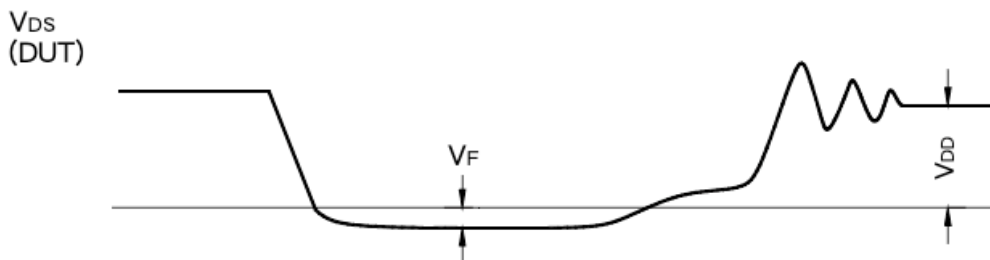
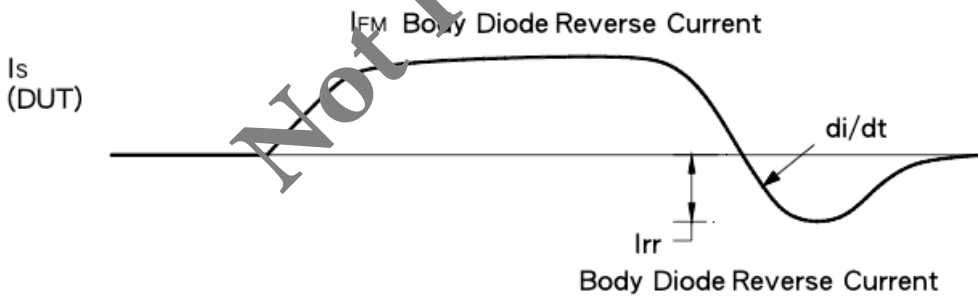
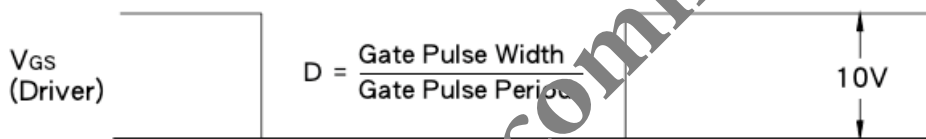
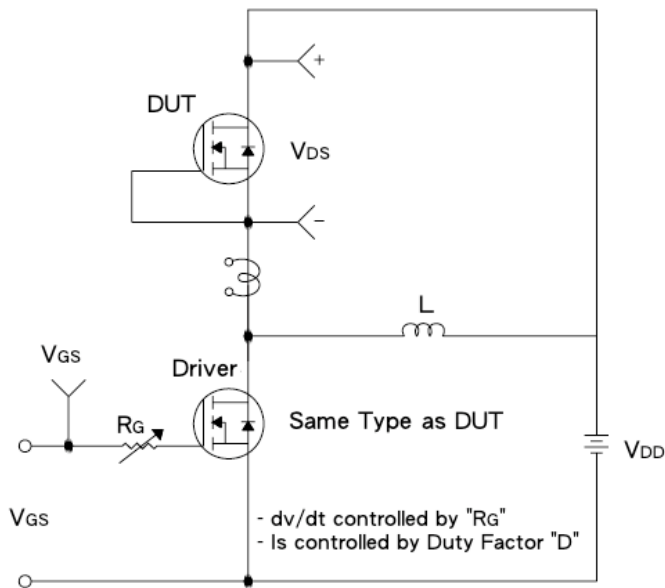
Resistive Switching Test Circuit & Waveform



EAS Test Circuit & Waveform

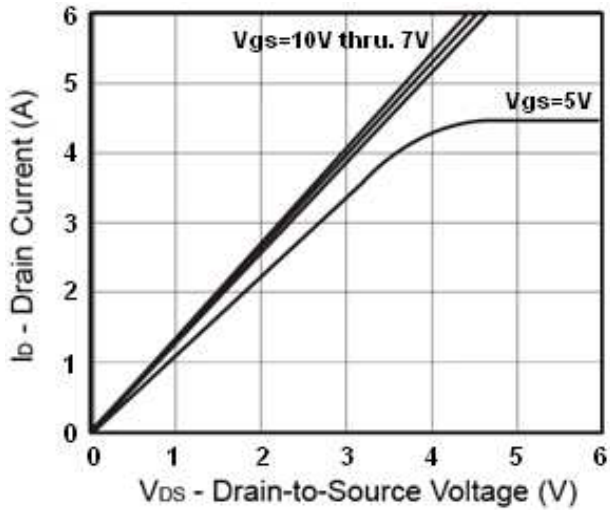


Diode Reverse Recovery Time Test Circuit & Waveform

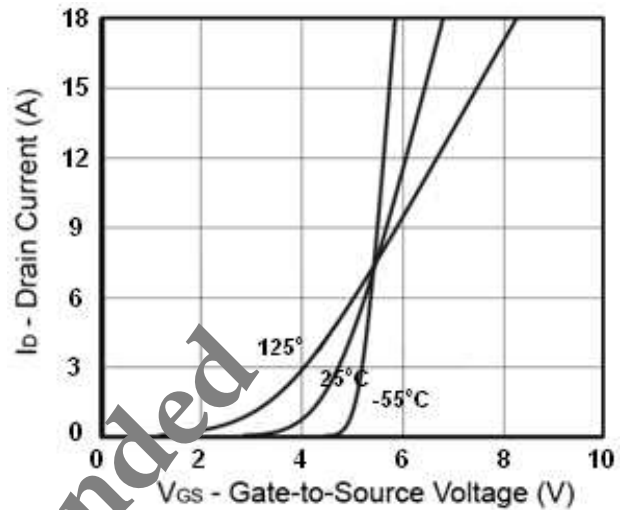


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

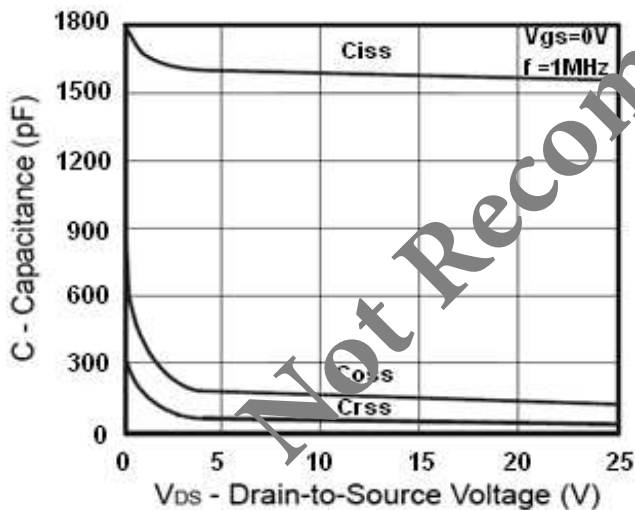
Output Characteristics



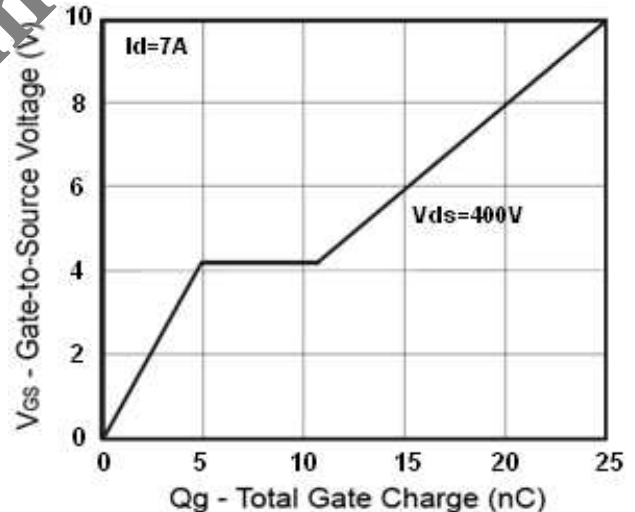
Transfer Characteristics



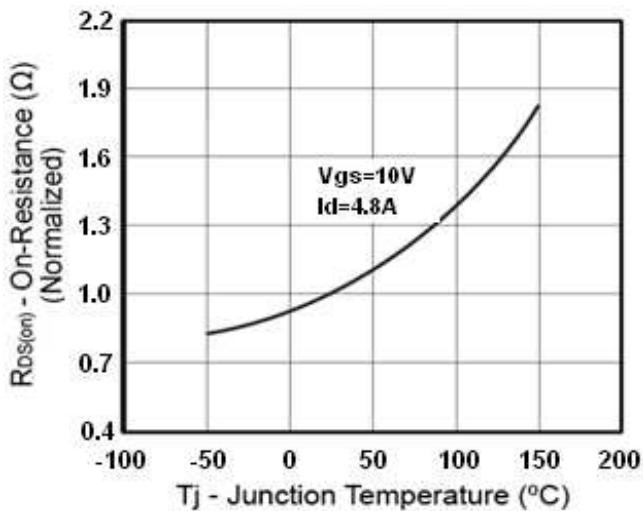
Capacitance



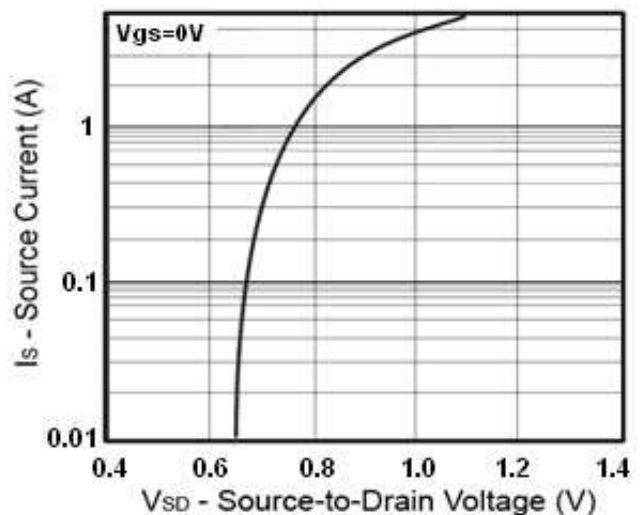
Gate Charge



On-Resistance vs. Junction Temperature

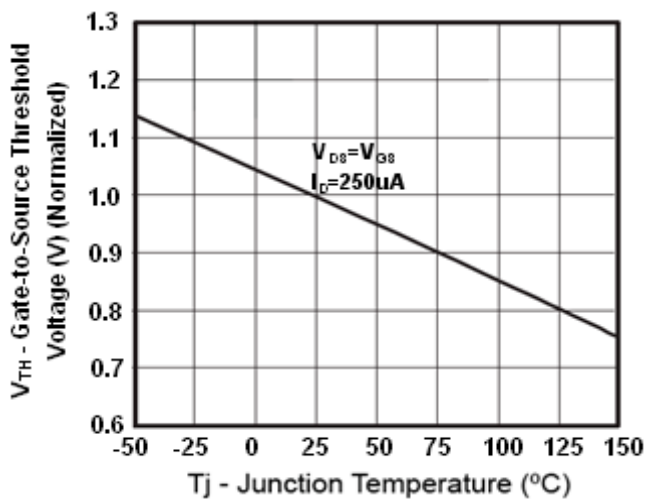


Source-Drain Diode Forward Voltage

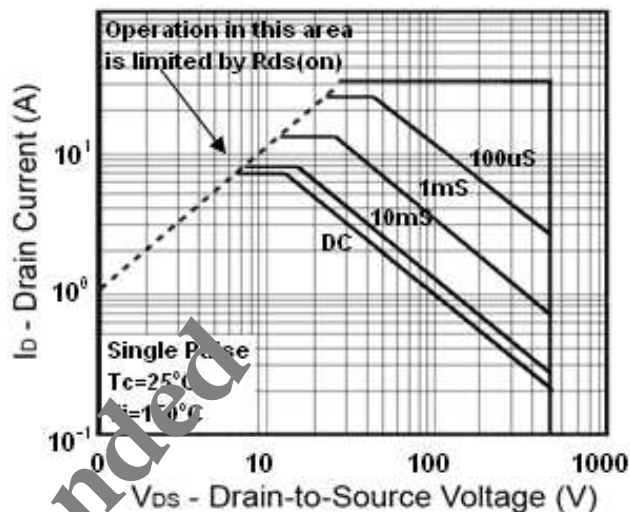


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

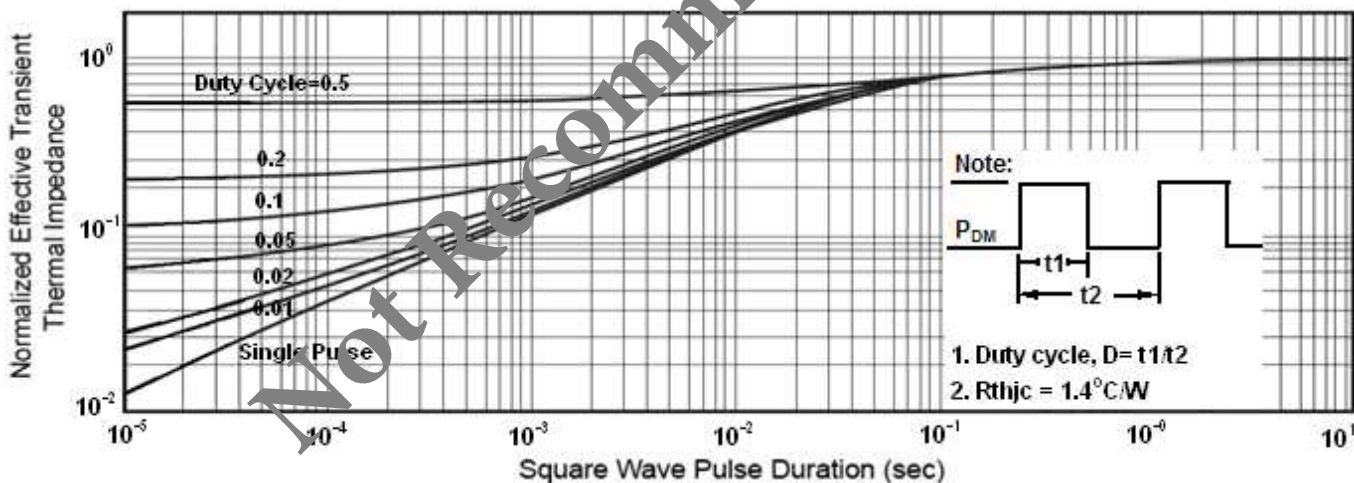
Gate Threshold vs. Junction Temperature



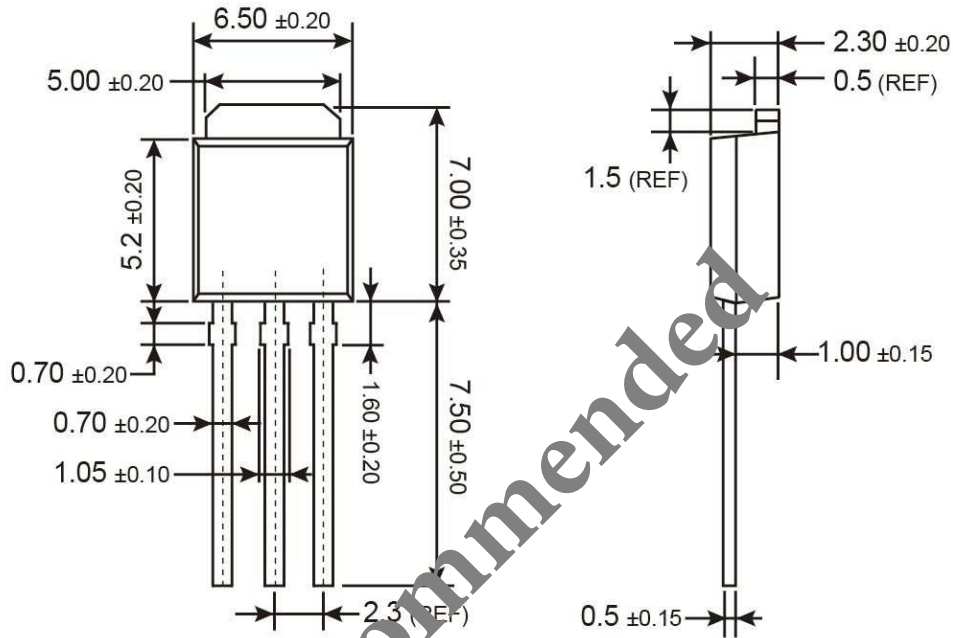
Maximum Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient

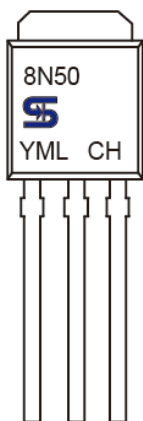


TO-251 Mechanical Drawing



Unit: Millimeters

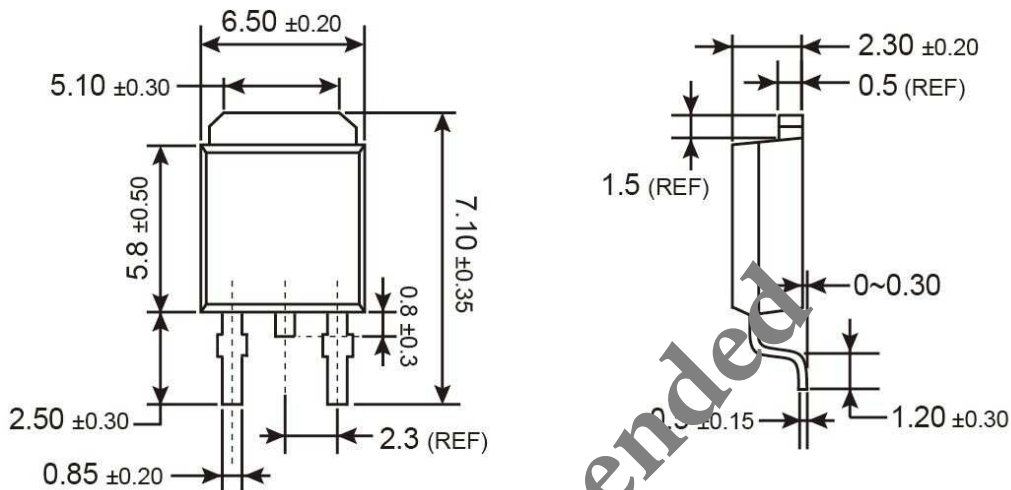
Marking Diagram



- 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

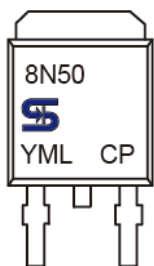
Not Recommended

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



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Not Recommended

Not Recommended

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