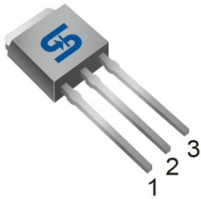
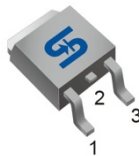


TO-251
(IPAK)



TO-252
(DPAK)



Pin Definition:

1. Gate
2. Drain
3. Source

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
600	1.25 @ $V_{GS} = 10V$	6

Features

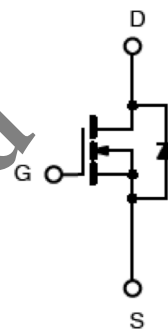
- High power and current handling capability.
- Low $R_{DS(on)}$ 1.25 Ω (Max.)
- Low gate charge typical @ 20.7nC (Typ.)

Ordering Information

Part No.	Package	Packing
TSM6N60CH C5G	TO-251	75pcs / Tube
TSM6N60CP ROG	TO-252	2.5kpcs / 13" Reel

Note: "G" denotes for Halogen Free

Block Diagram



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	6	A
		4.2	A
Pulsed Drain Current (Note 1)	I_{DM}	24	A
Single Pulse Avalanche Energy (Note 2)	E_{AS}	180	mJ
Total Power Dissipation @ Tc = 25°C	P_{TOT}	89	W
Operating Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

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

Note2: L=10mH, I_{AS} =6.0A, V_{DD} = 50V, R_G = 25 Ω , Starting T_J = 25°C

Thermal Performance

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

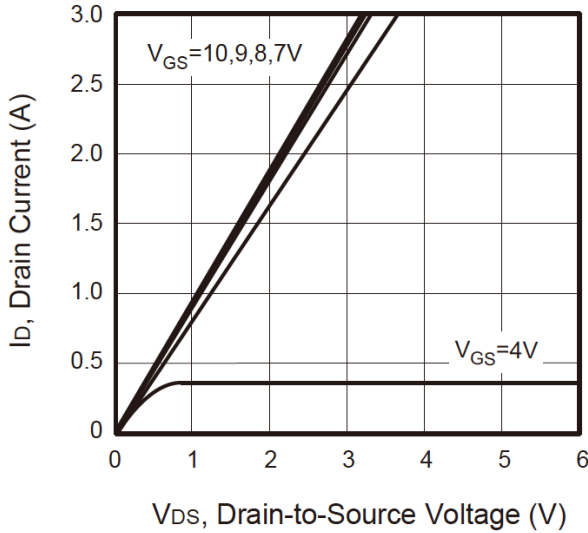
Electrical Specifications (Tc = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	600	--	--	V
Drain-Source On-State Resistance	$V_{GS} = 10V, I_D = 3.0A$	$R_{DS(ON)}$	--	1.1	1.25	Ω
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	2	2.75	4	V
Zero Gate Voltage Drain Current	$V_{DS} = 600V, V_{GS} = 0V$	I_{DSS}	--	--	1	μA
Gate Body Leakage	$V_{GS} = \pm 30V, V_{DS} = 0V$	I_{GSS}	--	--	± 100	nA
Dynamic ^(Note a)						
Total Gate Charge	$V_{DS} = 480V, I_D = 6A,$ $V_{GS} = 10V$	Q_g	--	20.7	28	nC
Gate-Source Charge		Q_{gs}	--	5.1	--	
Gate-Drain Charge		Q_{gd}	--	5.4	--	
Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	1248	--	pF
Output Capacitance		C_{oss}	--	117	--	
Reverse Transfer Capacitance		C_{rss}	--	11.3	--	
Switching ^(Note a)						
Turn-On Delay Time	$V_{GS} = 10V, I_D = 6A,$ $V_{DD} = 300V, R_{GEN} = 25m\Omega$	$t_{d(on)}$	--	21	44	ns
Turn-On Rise Time		t_r	--	7.6	15	
Turn-Off Delay Time		$t_{d(off)}$	--	57	107	
Turn-Off Fall Time		t_f	--	6.2	8	
Source-Drain Diode Ratings and Characteristic						
Source Current		I_S	--	--	6.0	A
Diode Forward Voltage	$I_S = 6.0A, V_{GS} = 0V$	V_{SD}	--	0.86	1.5	V

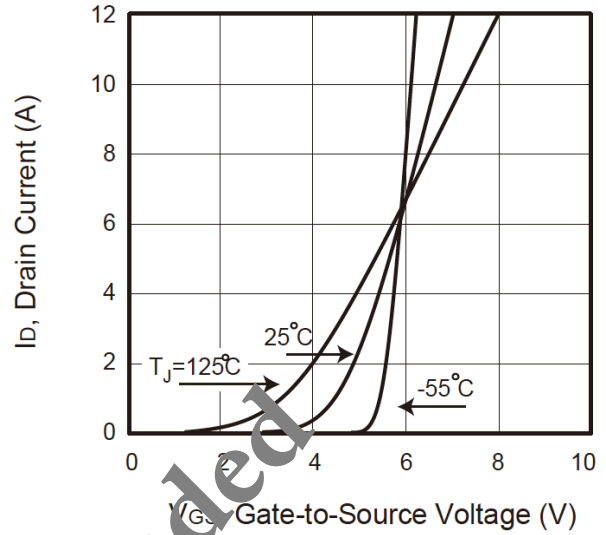
Note: Pulse Width < 300 μ s, Duty Cycle < 2%

Electrical Characteristics Curve ($T_c = 25^\circ\text{C}$, unless otherwise noted)

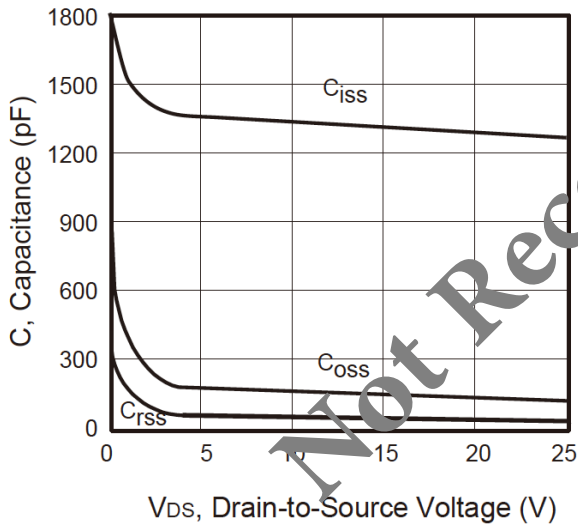
Output Characteristics



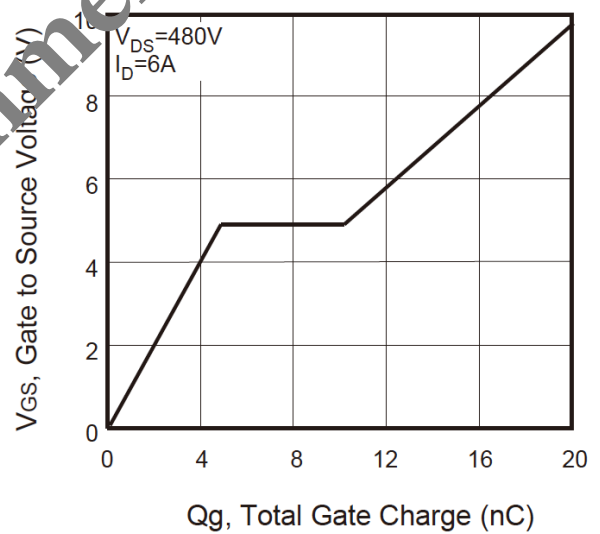
Transfer Characteristics



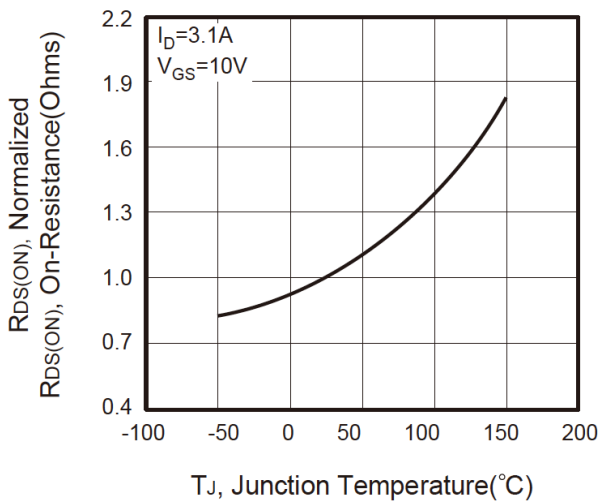
Capacitance



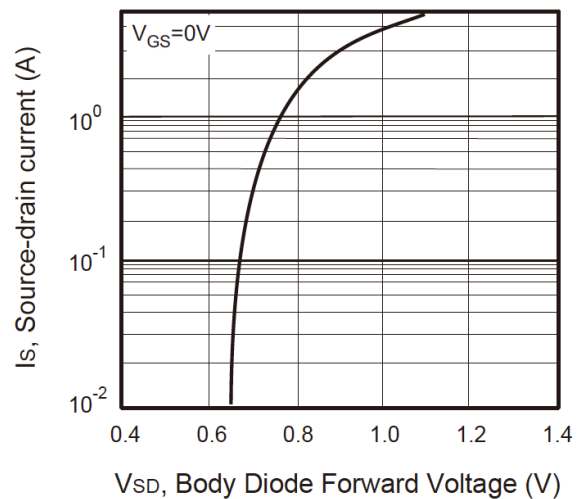
Gate Charge



On-Resistance vs. Junction Temperature

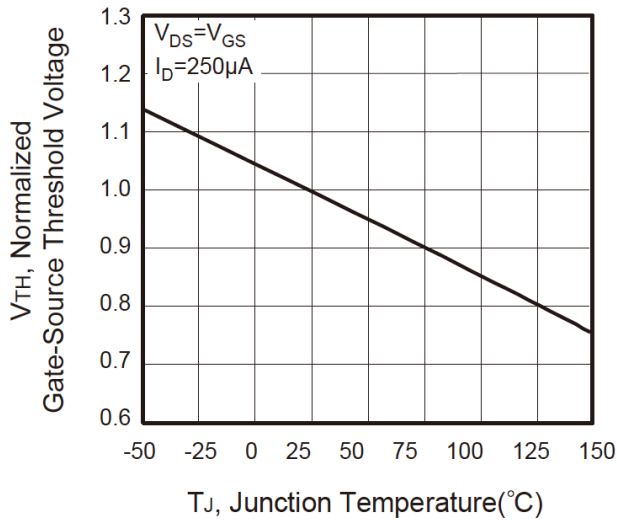


Source-Drain Diode Forward Voltage

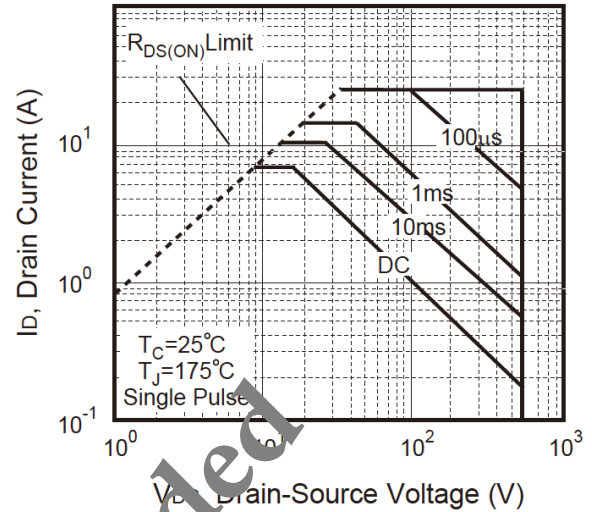


Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

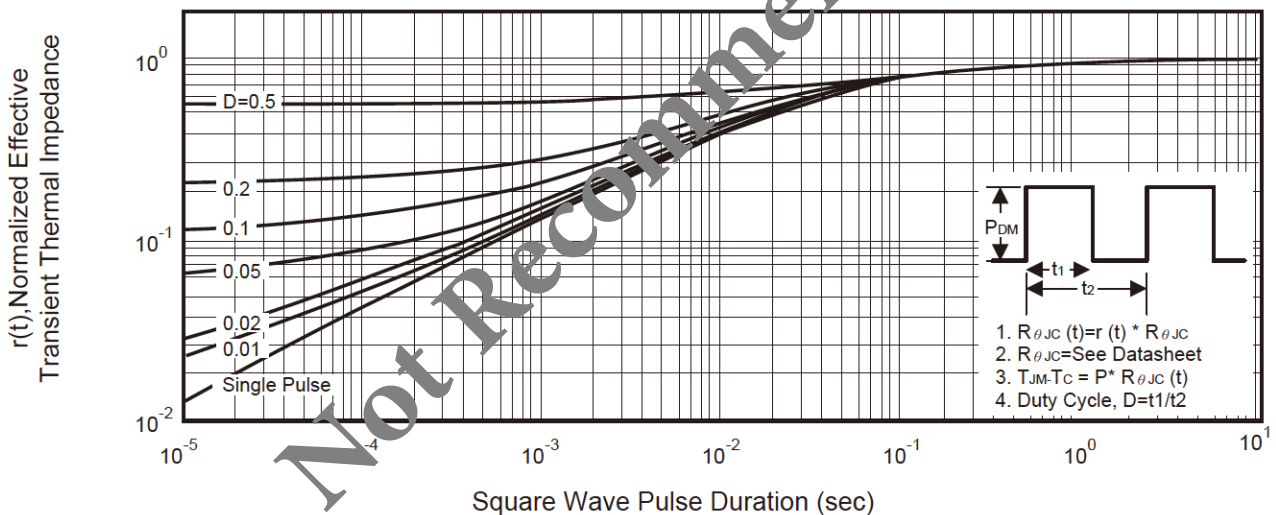
Threshold Voltage vs. Junction Temperature



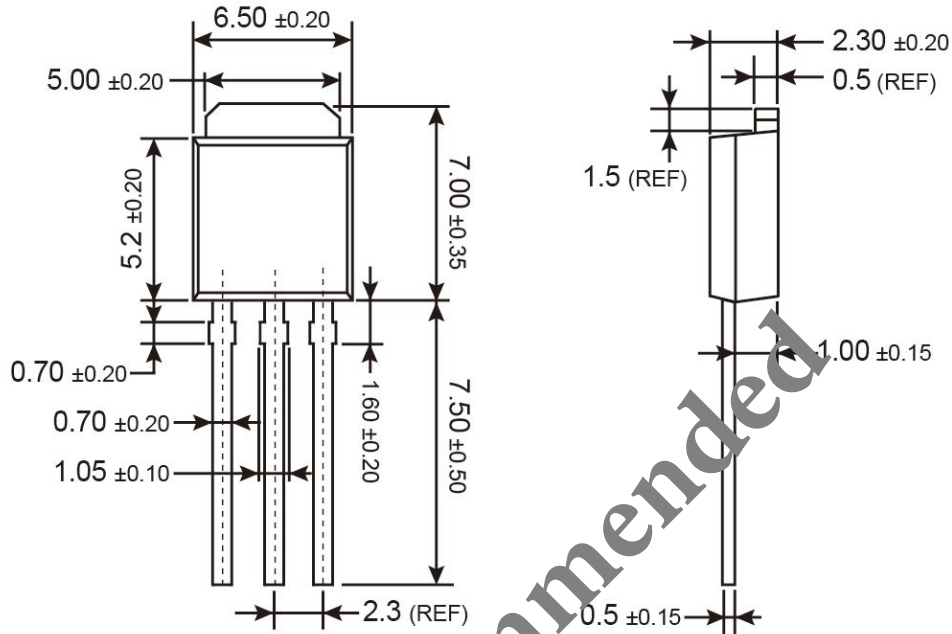
Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve

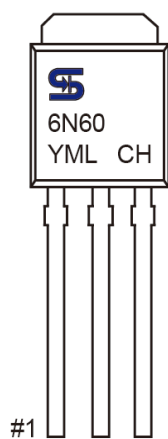


TO-251 Mechanical Drawing



Unit: Millimeters

Marking Diagram



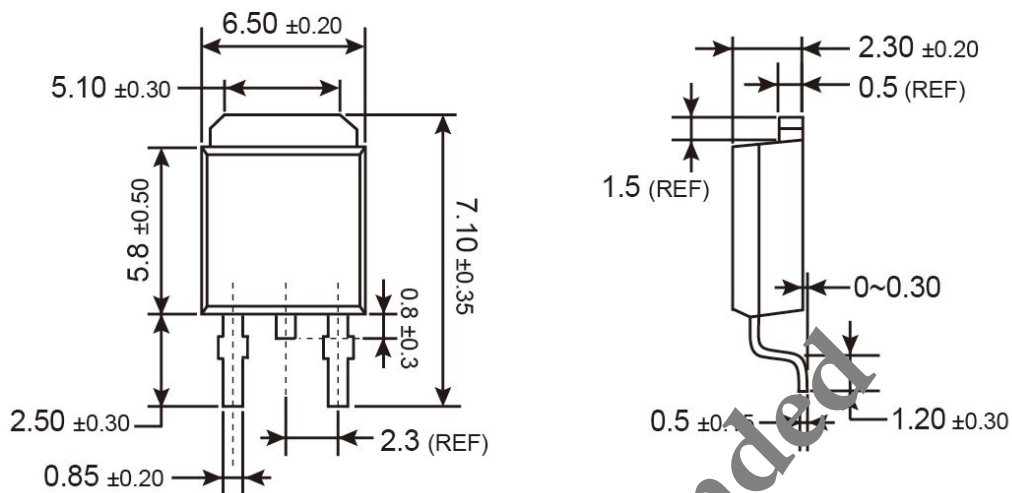
Y = Year Code

M = Month Code for Halogen Free Product

(O=Jan, P=Feb, Q=Mar, R=Apl, S=May, T=Jun, U=Jul, V=Aug, W=Sep, X=Oct, Y=Nov, Z=Dec)

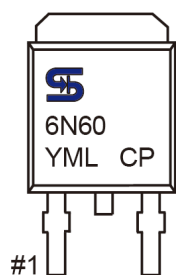
L = Lot Code

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



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

Not Recommended

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.