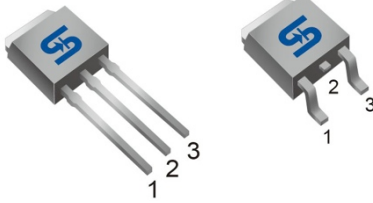




TO-251
(IPAK)

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

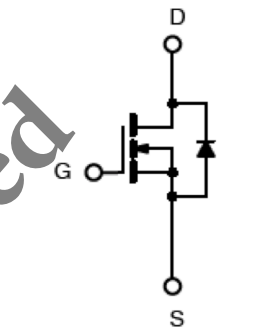
- High power and current handing capability.
- Low $R_{DS(ON)}$ 1.25 Ω (Max.)
- Low gate charge typical @ 20.7nC (Typ.)

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 ($T_c = 25^\circ C$ 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	$T_c = 25^\circ C$	6
		$T_c = 100^\circ C$	4.2
Pulsed Drain Current ^(Note 1)	I_{DM}	24	A
Single Pulse Avalanche Energy ^(Note 2)	E_{AS}	180	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: $L=10mH$, $I_{AS} = 6.0A$, $V_{DD} = 50V$, $R_G = 25\Omega$, 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 = 250μA	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 = 250μA	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} = ±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} = 25Ω	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

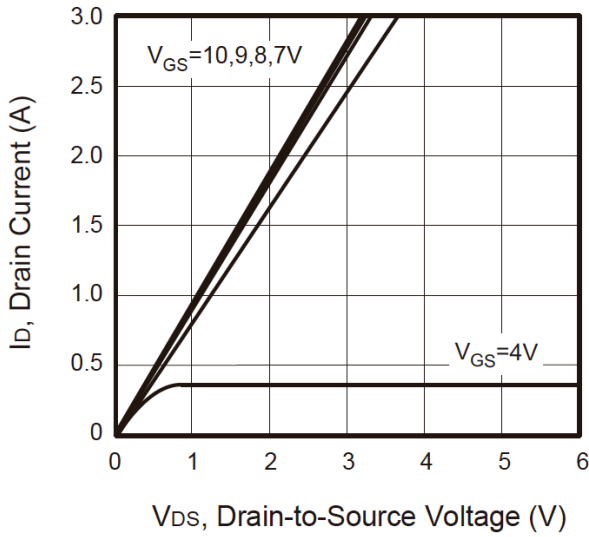
Note: Pulse Width < 300μs, Duty Cycle < 2%

Not Recommended

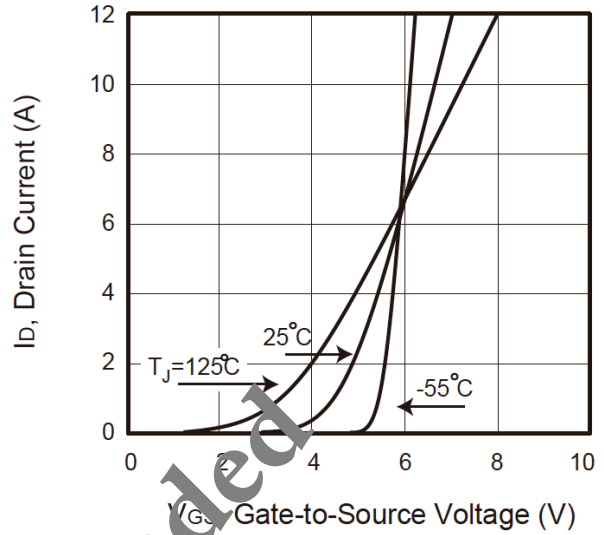


Electrical Characteristics Curve ($T_c = 25^\circ\text{C}$, unless otherwise noted)

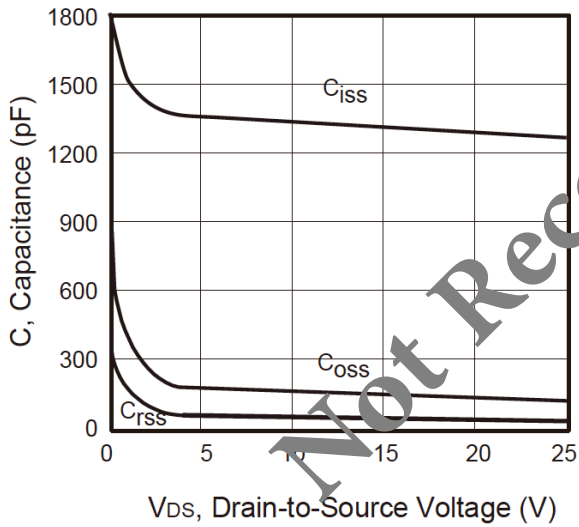
Output Characteristics



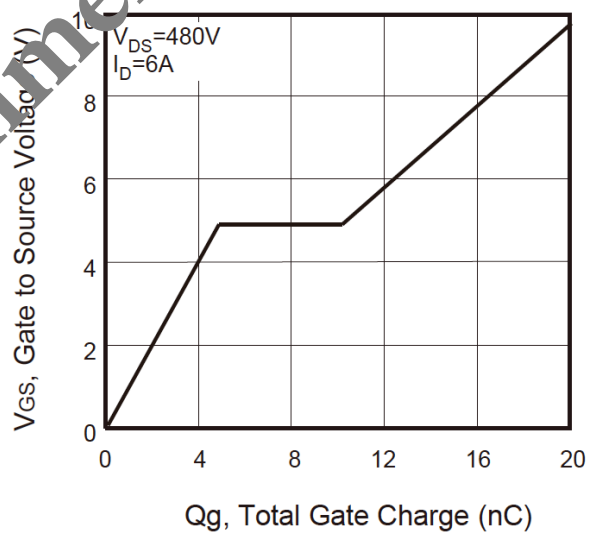
Transfer Characteristics



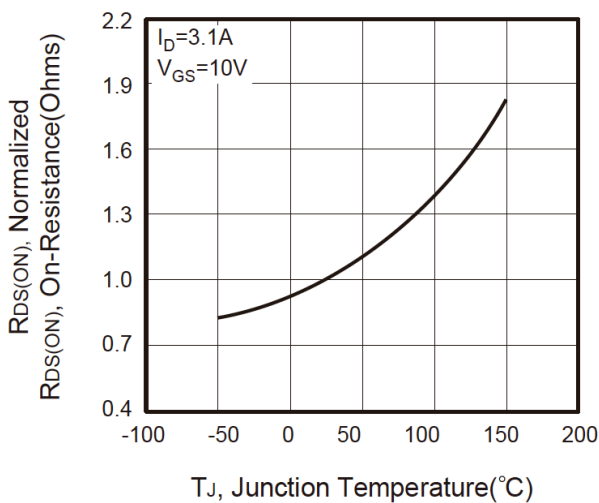
Capacitance



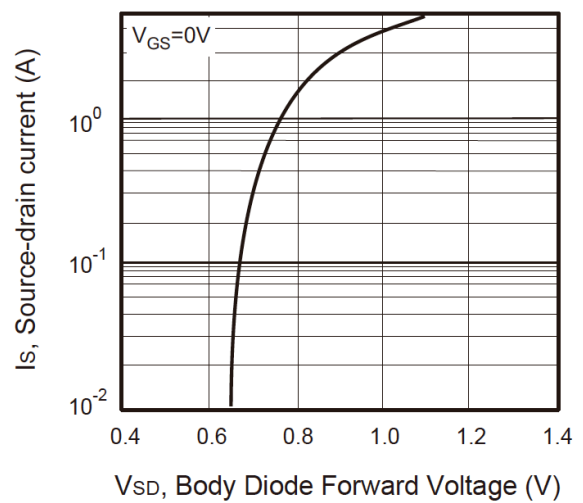
Gate Charge



On-Resistance vs. Junction Temperature



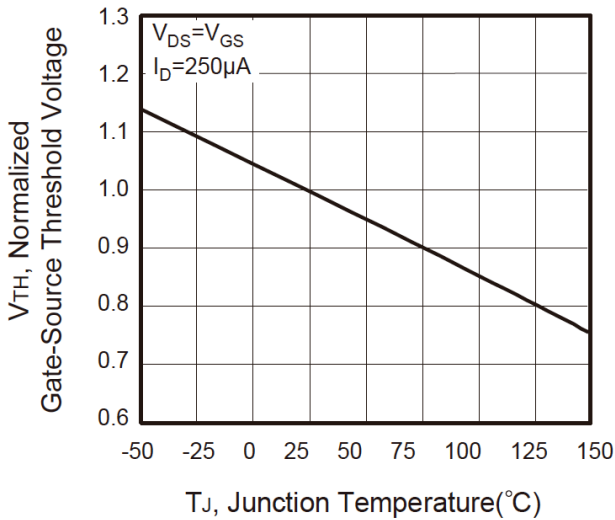
Source-Drain Diode Forward Voltage



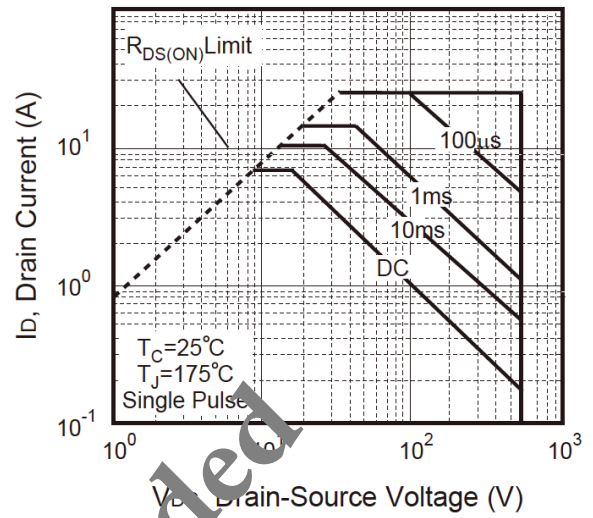


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

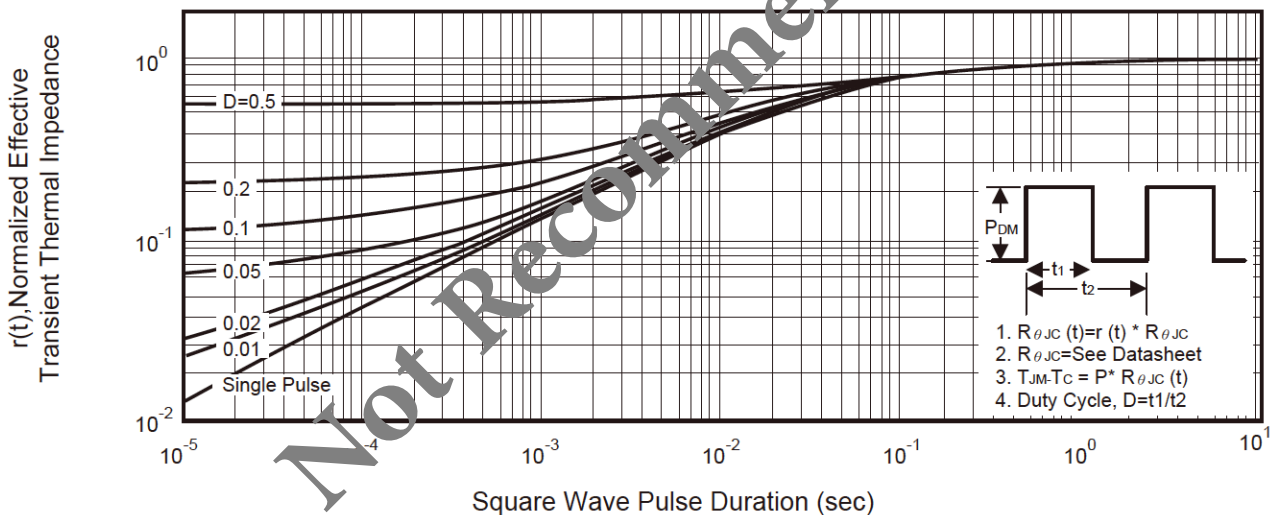
Threshold Voltage vs. Junction Temperature



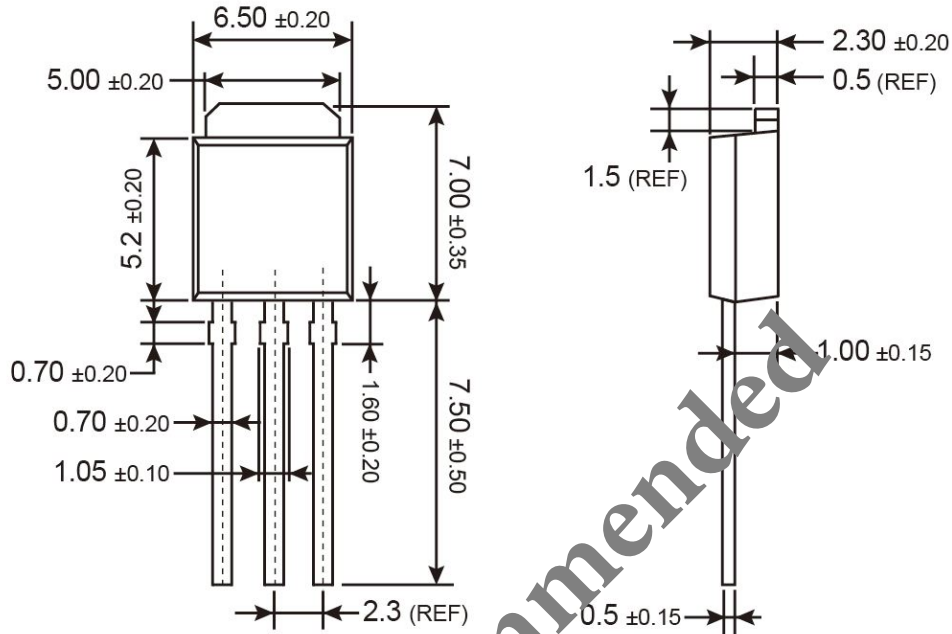
Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve

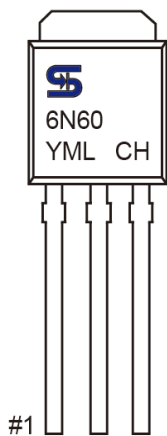


TO-251 Mechanical Drawing



Unit: Millimeters

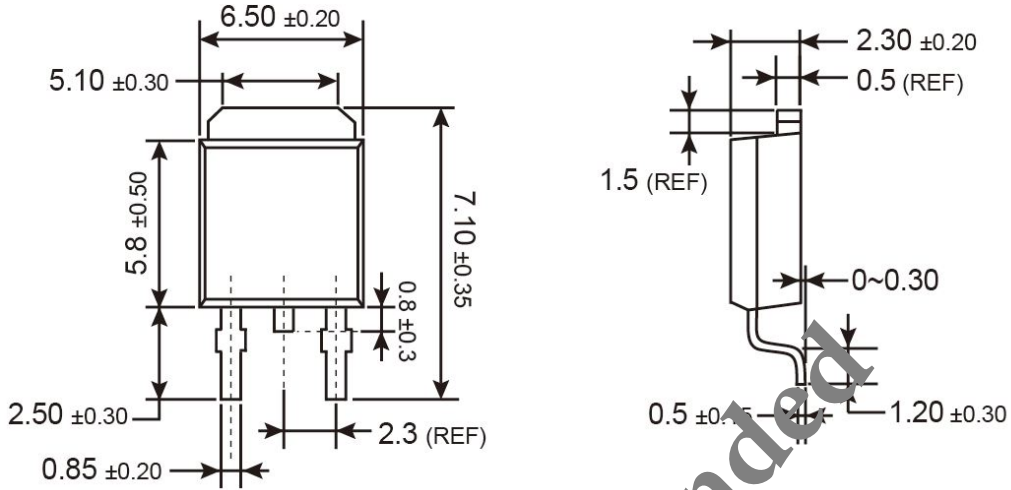
Marking Diagram



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

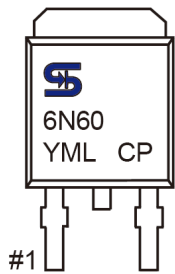
Not Recommended

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



- 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

Not Recommended

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