



Features

- Drain-Source Breakdown Voltage V_{DS} -60 V
- Drain-Source On-Resistance
 - $R_{DS(ON)}$ 14m Ω , at $V_{GS} = -10V$, $I_{DS} = -17A$
 - $R_{DS(ON)}$ 16m Ω , at $V_{GS} = -4.5V$, $I_{DS} = -14A$
- Continuous Drain Current at $T_C=25^\circ C$ $I_D = -61A$
- Advanced high cell density Trench Technology
- RoHS Compliance & Halogen Free

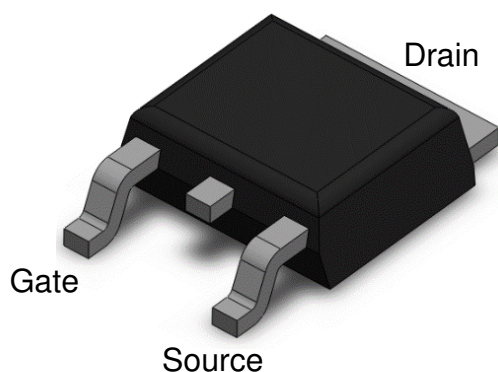
Applications

- Load Switch
- Power Management
- LCD Display inverter
- DC/DC Converter

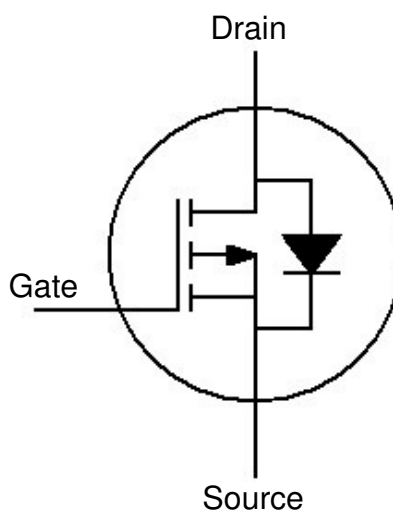
Description

The CTH6106PS-T52 uses high performance Trench Technology to provide excellent $R_{DS(ON)}$ and low gate charge which is suitable for most of the synchronous buck converter applications .

Package Outline



Schematic



**Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
V_{DS}	Drain-Source Voltage	-60	V	
V_{GS}	Gate-Source Voltage	±20	V	
I_D	Continuous Drain Current @ $T_C=25^\circ\text{C}$	-61	A	1
I_{DM}	Pulsed Drain Current	-240	A	1
P_D	Total Power Dissipation @ $T_C=25^\circ\text{C}$	114	W	2
T_{STG}	Storage Temperature Range	-55 to 150	°C	
T_J	Operating Junction Temperature Range	-55 to 150	°C	

Thermal Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$R_{\theta JC}$	Thermal Resistance Junction-Case		-	-	1.1	C°/W	1,2

**Electrical Characteristics** $T_A = 25^\circ\text{C}$ (unless otherwise specified)**Static Characteristics**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{DS}}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V	
I_{DSS}	Drain-Source Leakage Current	$V_{DS} = -60V, V_{GS} = 0V$	-	-	-1	μA	
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA	

On Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS} = -10V, I_D = -17A$	-	14	17	m	
		$V_{GS} = -4.5V, I_D = -14A$	-	16	20	m	
$V_{GS(TH)}$	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-	-3.0	V	

Dynamic Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
C_{ISS}	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f=1Mhz$	-	4120	-	pF	
C_{OSS}	Output Capacitance		-	415	-		
C_{RSS}	Reverse Transfer Capacitance		-	140	-		

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$T_{D(ON)}$	Turn-On Delay Time	$V_{DS} = -30V,$ $V_{GS} = -10V,$ $R_L = 30 \Omega,$ $R_G = 6 \Omega,$	-	52	-	ns	
T_R	Rise Time		-	19	-		
$T_{D(OFF)}$	Turn-Off Delay Time		-	220	-		
T_F	Fall Time		-	60	-		
Q_G	Total Gate Charge	$V_{DS} = -30, V_{GS} = -4.5V,$ $I_D = -50A$	-	45	-	nC	
Q_{GS}	Gate-Source Charge		-	19	-		
Q_{GD}	Gate-Drain (Miller) Charge		-	25	-		

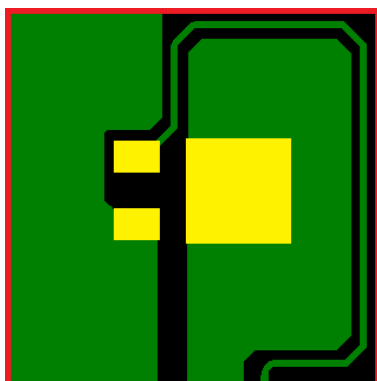


Drain-Source Diode Characteristics

<i>Symbol</i>	<i>Parameters</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Units</i>	<i>Notes</i>
V _{SD}	Body Diode Forward Voltage	V _{GS} = 0V, I _D = -2A	-	-0.9	-1.2	V	
I _{SD}	Body Diode Continuous Current		-	-	-2	A	1

Note:

1. The power dissipation is limited by 150°C junction temperature.
2. Device mounted on a glass-epoxy board



FR-4
25.4 × 25.4 mm .
2 Oz Copper

Actual Size

3. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
4. Thermal Resistance follow JESD51-3.



Typical Characteristic Curves

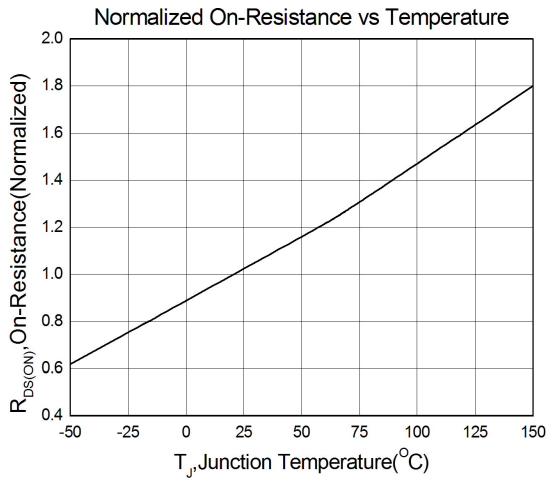


Figure 1

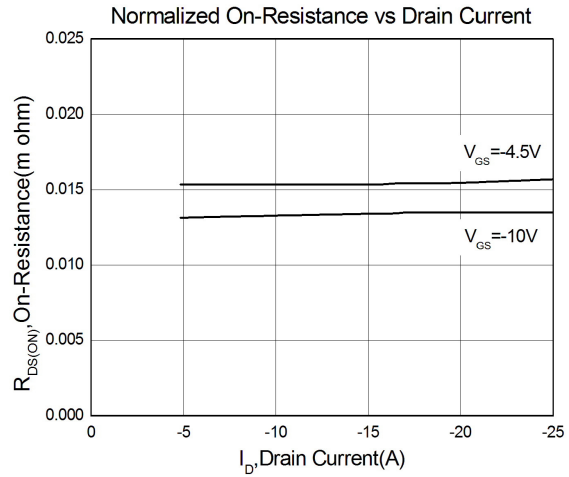


Figure 2

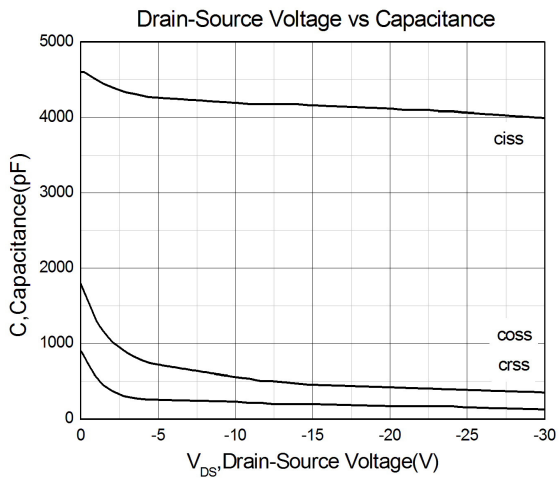


Figure 3

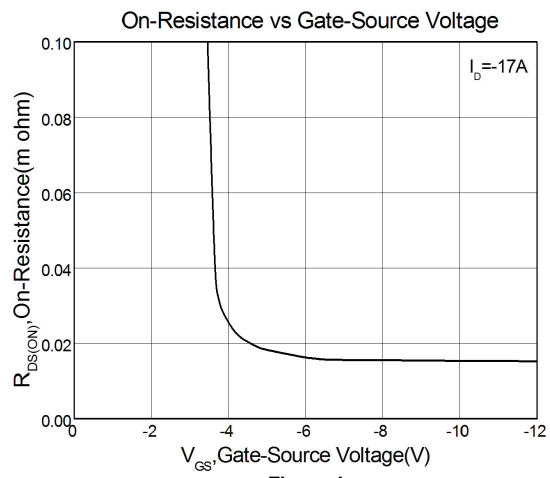


Figure 4

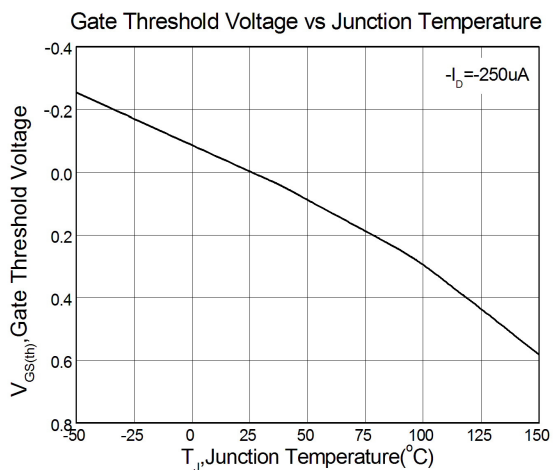


Figure 5

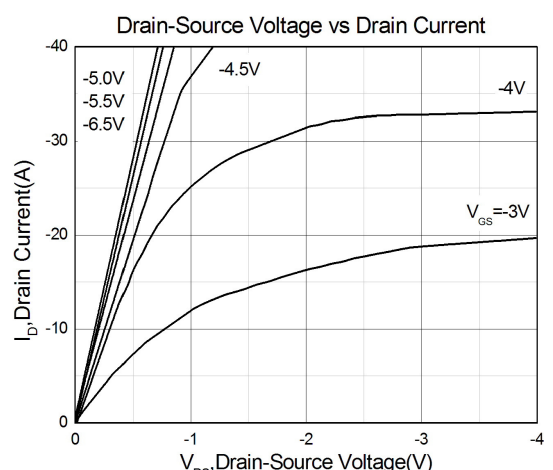
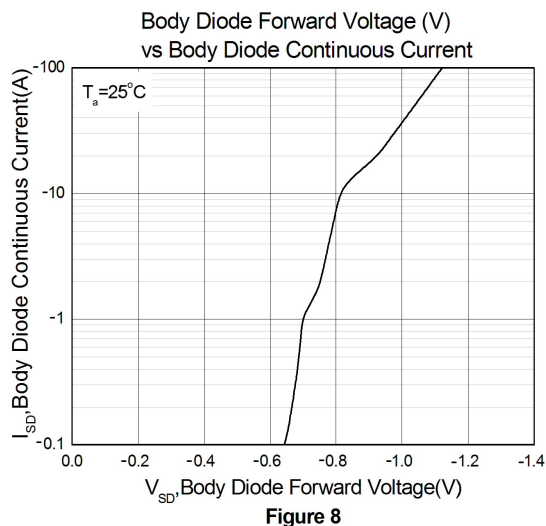
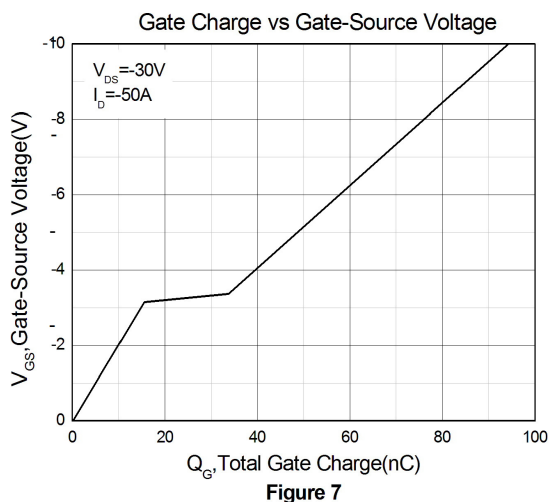


Figure 6





CTH6106PS-T52

P-Channel Enhancement MOSFET

Test Circuits & Waveforms

Figure 9: Gate Charge Test Circuit

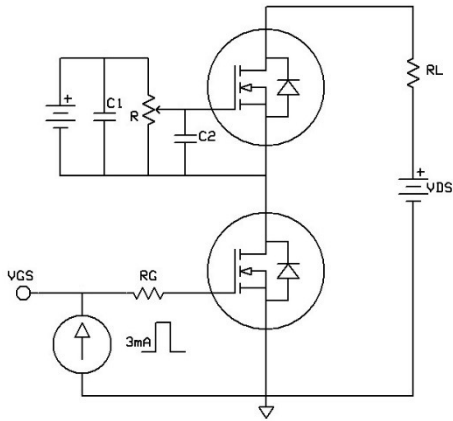


Figure 10: Gate Charge Waveform

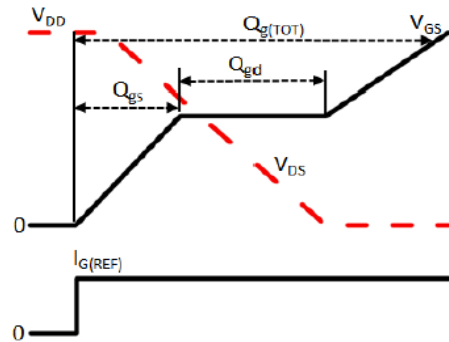


Figure 11: Switching Time Test Circuit

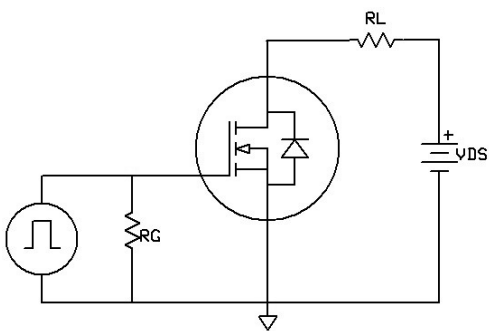
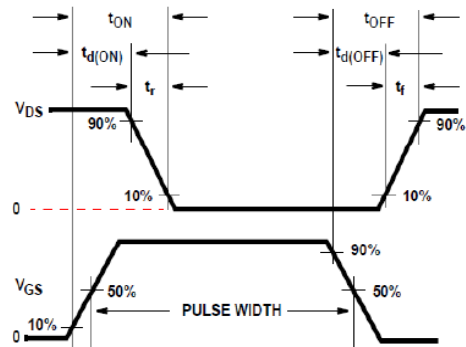
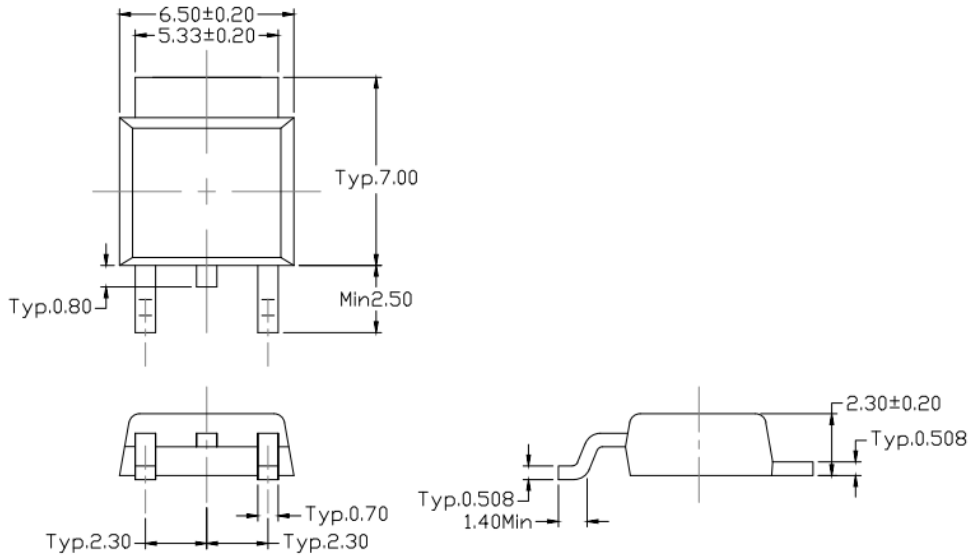


Figure 12: Switching Time Waveform



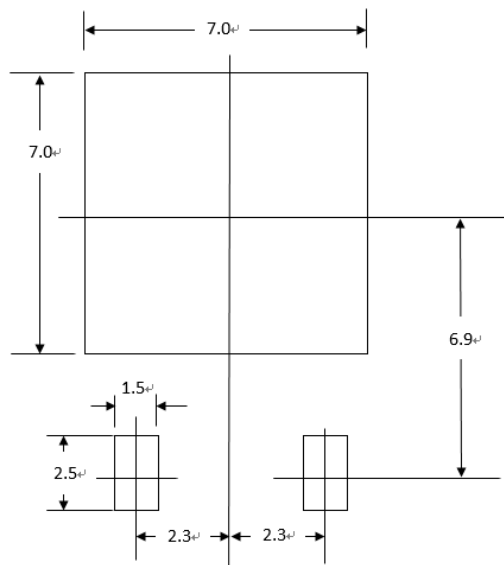


Package Dimension (TO-252)



Dimensions in mm unless otherwise stated

Recommended pad layout for surface mount leadform

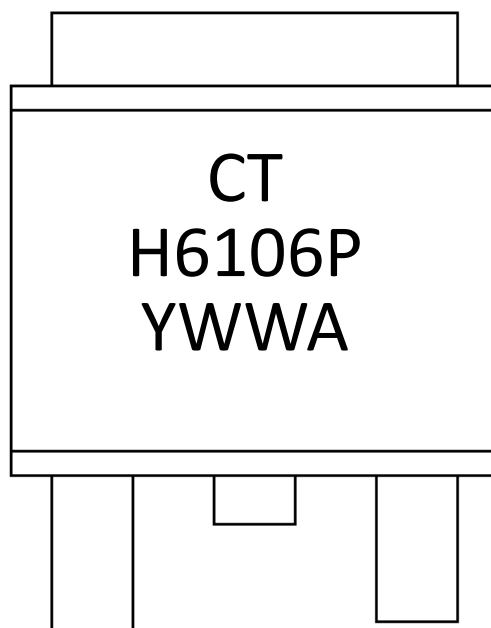


Dimensions in mm unless otherwise

stated



Marking Information



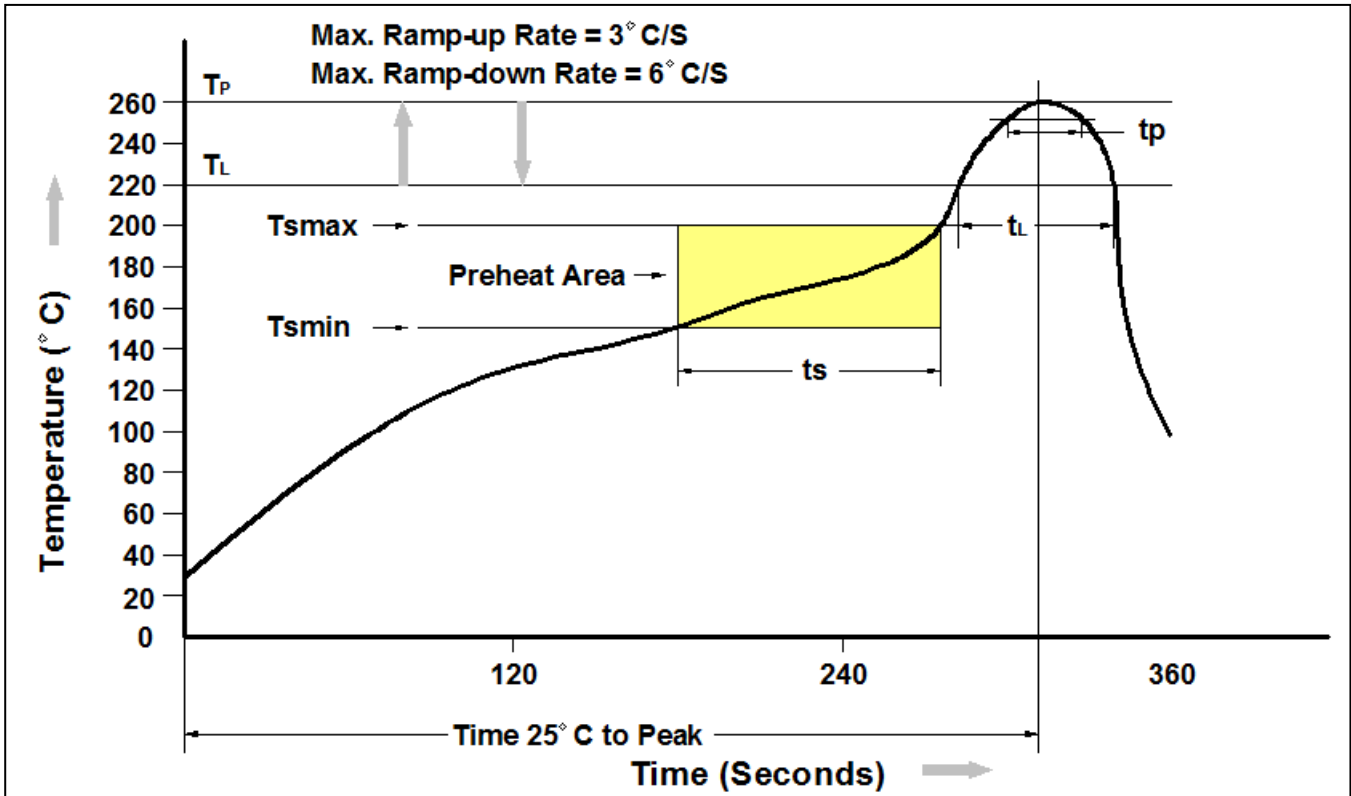
CT : Denotes “ CT Micro”
H6106P : Device Number
Y : Fiscal Year
WW : Work Week
A : Production Code

Ordering Information

Part Number	Description	Quantity
CTH6106PS-T52	TO-252 Reel	2500 pcs



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150 °C
Temperature Max. (T _{smax})	200 °C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up Rate (t _L to t _P)	3 °C/second max.
Liquidous Temperature (T _L)	217 °C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
Peak Body Package Temperature	260 °C +0 °C / -5 °C
Time (t _P) within 5 °C of 260 °C	30 seconds
Ramp-down Rate (T _P to T _L)	6 °C/second max
Time 25 °C to Peak Temperature	8 minutes max.



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