

Description

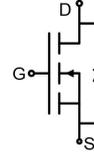
The CH5N100TQ uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

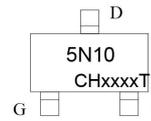
- $V_{DS} = 100V, I_D = 4.0A$
 $R_{DS(ON)} < 139m\Omega @ V_{GS}=10V$
- High density cell design for ultra low R_{Dson}

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Schematic diagram



SOT-23-3L

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous $T_C=25^\circ C$	I_D	4.0	A
Drain Current-Pulsed ^(Note 1) $T_C=25^\circ C$	I_{DM}	8.4	A
Maximum Power Dissipation $T_A=25^\circ C$	P_D	1.25	W
Maximum Operating Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

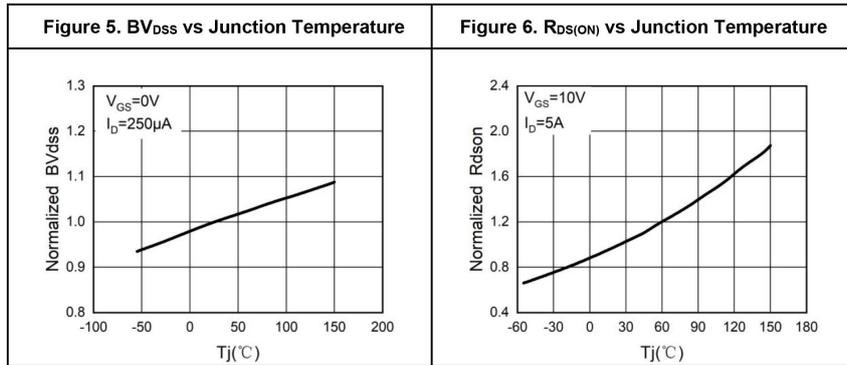
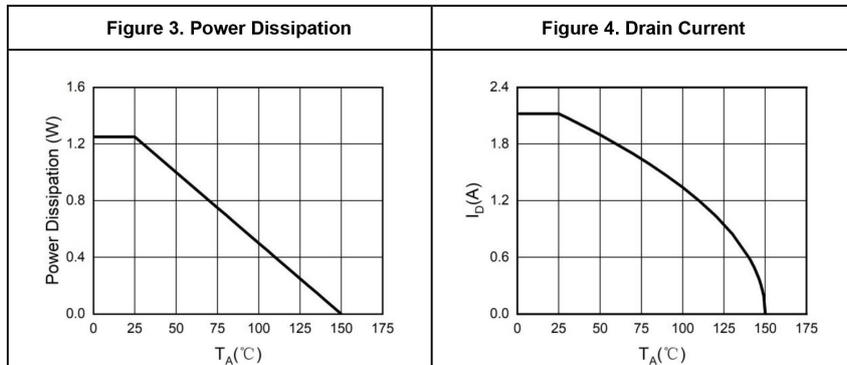
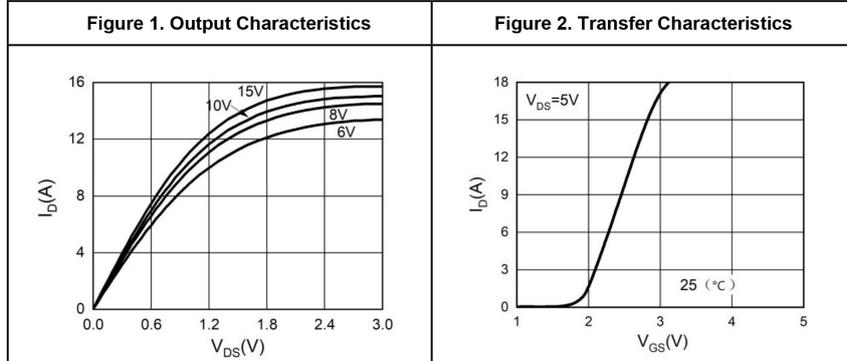
Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	100	$^\circ C/W$
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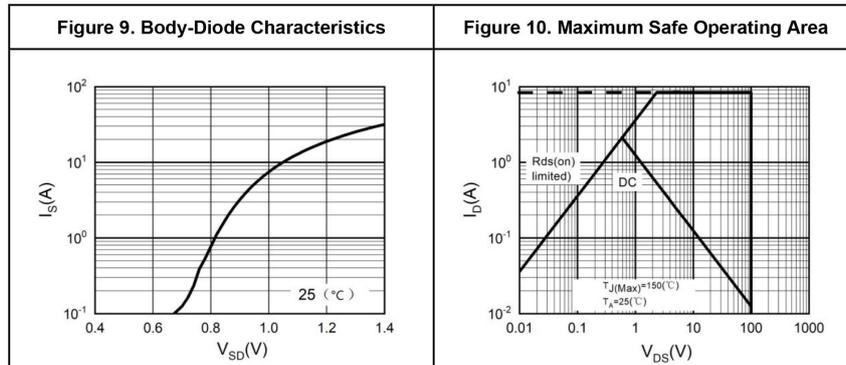
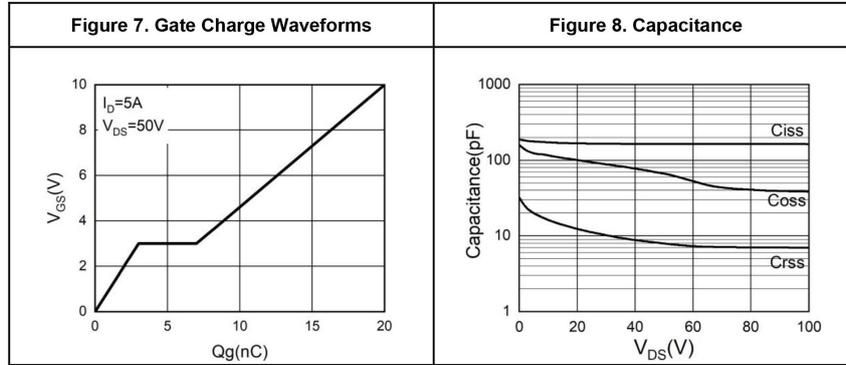
Electrical Characteristics ($T_J=25^\circ C$ unless otherwise noted)

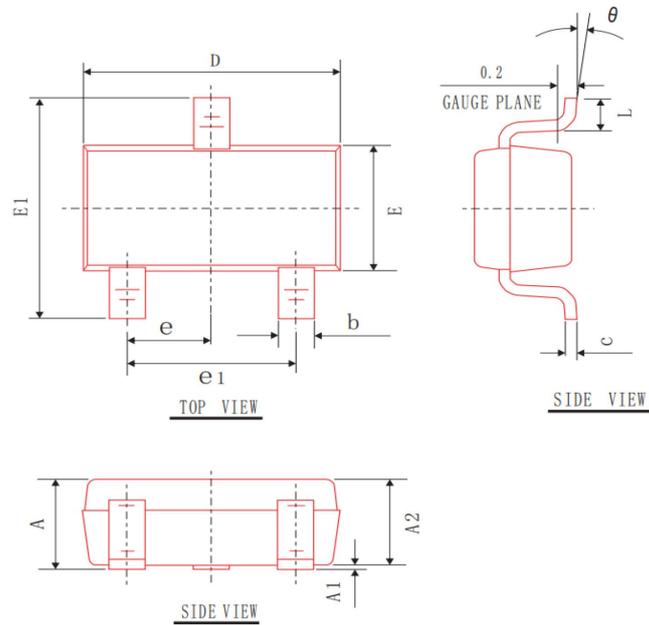
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100		-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	-	1	μA

Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=1.5A$	-	107	139	m Ω
		$V_{GS}=4.5V, I_D=1.0A$	-	132	175	
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	164	-	PF
Output Capacitance	C_{oss}		-	66	-	PF
Reverse Transfer Capacitance	C_{rss}		-	8	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=50V, I_D=1A,$ $V_{GS}=10V, R_G=3.0\Omega$	-	6	-	nS
Turn-on Rise Time	t_r		-	7	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	t_f		-	3	-	nS
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=2A,$ $V_{GS}=10V$	-	20	-	nC
Gate-Source Charge	Q_{gs}		-	3	-	nC
Gate-Drain Charge	Q_{gd}		-	4	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=3.0A$	-	-	1.2	V

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical And Thermal Characteristics (Curves)


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Package Mechanical Data(SOT-23-3L)


COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	—	—	1.30
A1	0.00	0.05	0.10
A2	1.00	1.10	1.20
b	0.30	0.40	0.50
c	0.119	0.127	0.135
e1	1.80	1.90	2.00
D	2.80	2.90	3.00
E	1.50	1.60	1.70
E1	2.60	2.80	3.00
L	0.30	0.45	0.60
θ	0°	4°	8°
e	0.95BSC		