

**Features**

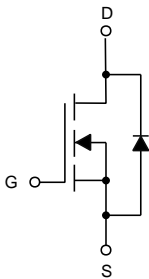
- Ultra Low Gate Charge
- Low Reverse Transfer Capacitance
- Fast Switching Capability
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	3.7	A
Pulsed Drain Current	$I_{DM}$	14.8	A

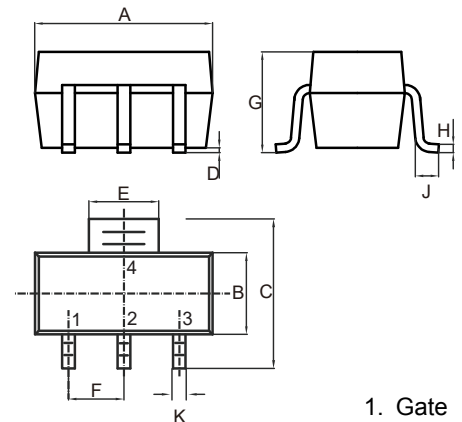
**Internal Structure**



**Marking: T04N10**

**N-CHANNEL  
MOSFET**

**SOT-223**



- 1. Gate
- 2,4. Drain
- 3. Source

DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.248	0.264	6.30	6.70	
B	0.130	0.146	3.30	3.70	
C	0.264	0.287	6.70	7.30	
D	0.001	0.004	0.02	0.10	
E	0.114	0.122	2.90	3.10	
F	0.091		2.30		TYP.
G	---	0.071	---	1.80	
H	0.009	0.014	0.23	0.35	
J	0.030	---	0.75	---	
K	0.026	0.033	0.66	0.84	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>On Characteristics (Note 1)</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	2	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$		0.115	0.14	$\Omega$
<b>Dynamic Characteristics (Note 2)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		690		pF
Output Capacitance	$C_{oss}$			120		
Reverse Transfer Capacitance	$C_{rss}$			90		
<b>Switching Characteristics (Note 2)</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V, R_G=2.5\Omega, I_D=2A, V_{GS}=10V$		11		ns
Turn-On Rise Time	$t_r$			7.4		
Turn-Off Delay Time	$t_{d(off)}$			35		
Turn-Off Fall Time	$t_f$			9.1		
Total Gate Charge	$Q_g$	$V_{DS}=30V, I_D=3A, V_{GS}=10V$		15.5		nC
Gate-Source Charge	$Q_{gs}$			3.2		
Gate-Drain Charge	$Q_{gd}$			4.7		
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Drain-Source Diode Forward Current	$I_S$				9.6	A
Pulsed Drain-Source Diode Forward Current	$I_{SM}$				38.4	
Diode Forward Voltage (Note 1)	$V_{SD}$	$V_{GS}=0V, I_S=9A$			1.2	V

Note: 1. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

2. Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics**

Fig. 1 - Output Characteristics

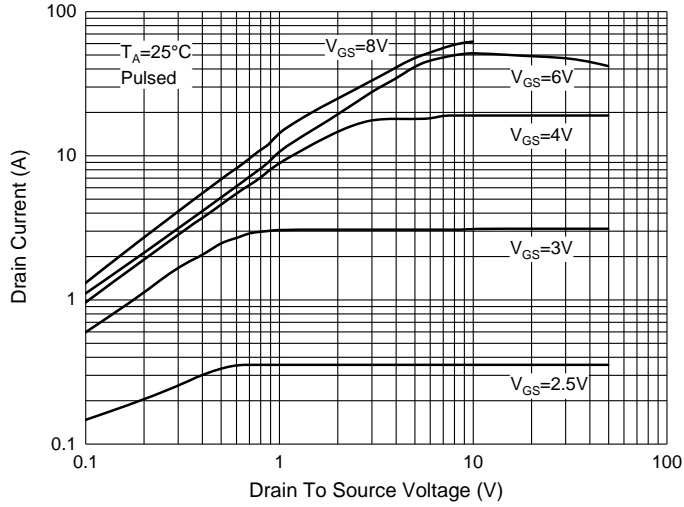


Fig. 2 - Transfer Characteristics

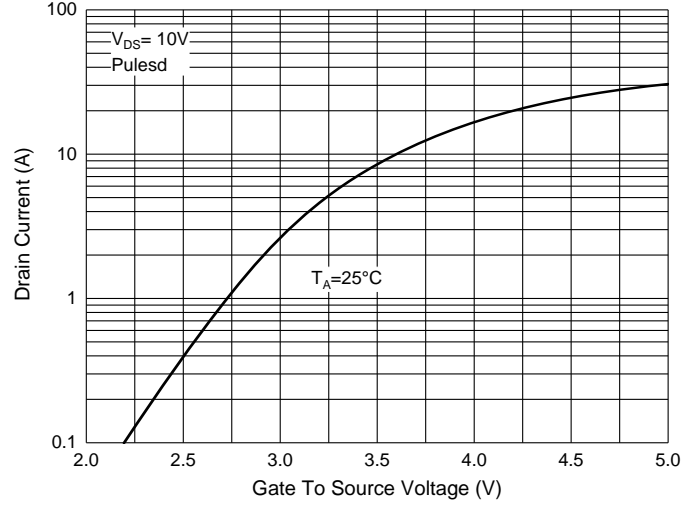


Fig. 3 -  $R_{DS(ON)} - I_D$

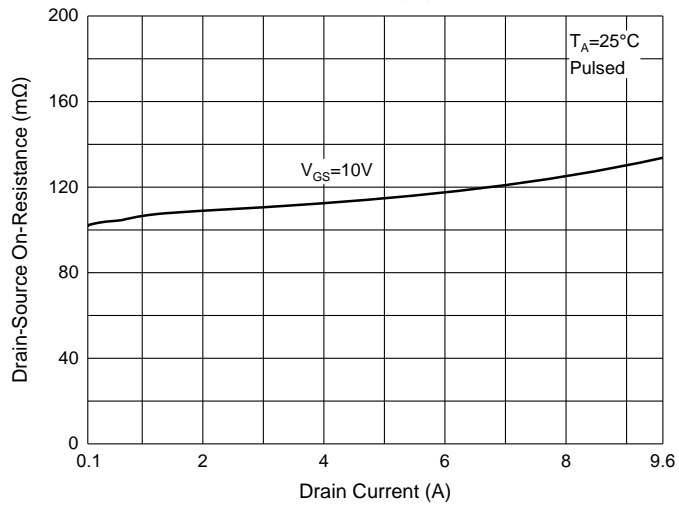


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

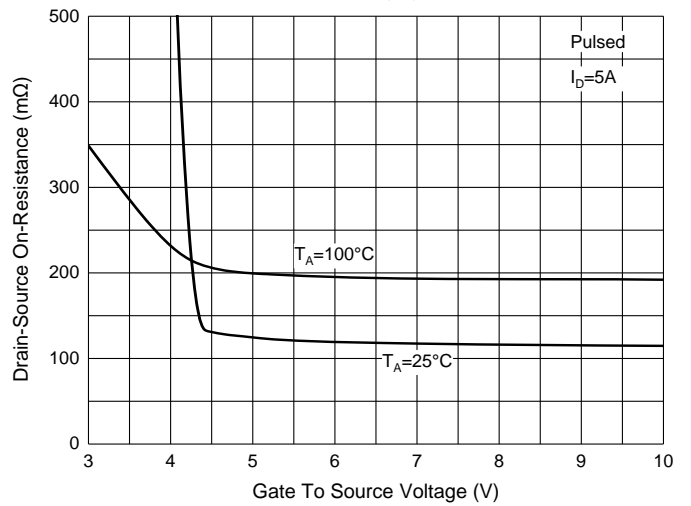


Fig. 5 -  $I_S - V_{SD}$

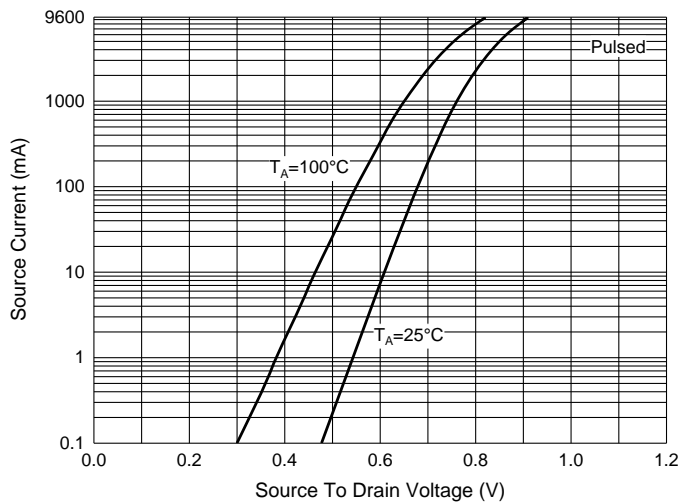
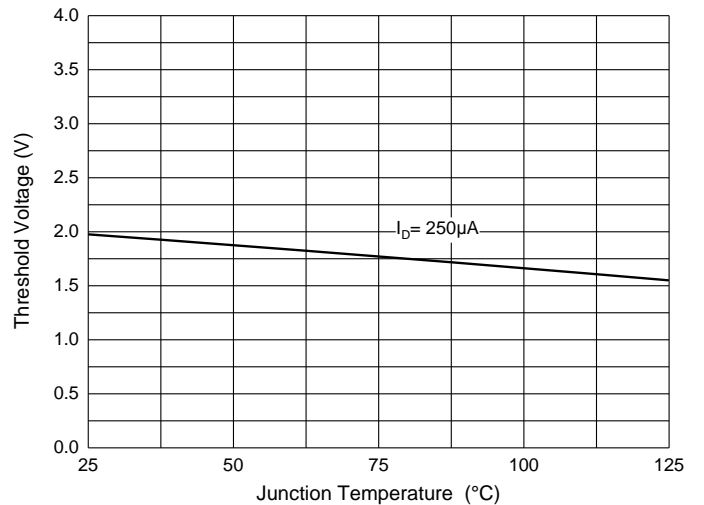


Fig. 6 - Threshold Voltage



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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