

**Features**

- Low gate charge
- 100% avalanche tested
- Improved dv/dt capability
- RoHS compliant
- Halogen free package
- JEDEC Qualification

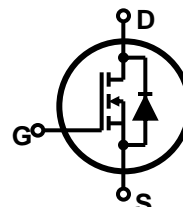
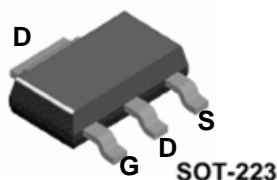
$$V_{DSS} = 440 \text{ V @ } T_{jmax}$$

$$I_D = 2 \text{ A}$$

$$R_{DS(on)} = 3.4 \text{ } \Omega(\text{max}) \text{ @ } V_{GS} = 10 \text{ V}$$

$$R_{DS(on)} = 2.75 \text{ } \Omega(\text{typ}) \text{ @ } V_{GS} = 10 \text{ V}$$

$$R_{DS(on)} = 2.80 \text{ } \Omega(\text{typ}) \text{ @ } V_{GS} = 7.5 \text{ V}$$



Device	Package	Marking
TMT2N40G	SOT223	TMT2N40G

**Absolute Maximum Ratings**

Parameter	Symbol	TMT2N40G	Unit
Drain-Source Voltage	$V_{DS}$	400	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Continuous Drain Current	$I_D$	$T_C = 25 \text{ } ^\circ\text{C}$	2.0*
		$T_C = 100 \text{ } ^\circ\text{C}$	1.2*
Pulsed Drain Current (Note 1)	$I_{DM}$	8*	A
Single Pulse Avalanche Energy (Note 2)	$E_{AS}$	46	mJ
Repetitive Avalanche Current (Note 1)	$I_{AR}$	2	A
Repetitive Avalanche Energy (Note 1)	$E_{AR}$	0.2	mJ
Power Dissipation	$P_D$	$T_C = 25 \text{ } ^\circ\text{C}$	2
		Derate above 25 $^\circ\text{C}$	0.02
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	$T_L$	300	$^\circ\text{C}$

\* Limited only by maximum junction temperature

**Thermal Characteristics**

Parameter	Symbol	TMT2N40G	Unit
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$

**Electrical Characteristics :  $T_C=25^\circ\text{C}$ , unless otherwise noted**

Parameter	Symbol	Test condition	Min	Typ	Max	Units
<b>OFF</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	400	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 400\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	$\mu\text{A}$
		$V_{DS} = 320\text{ V}, T_C = 125^\circ\text{C}$	--	--	10	$\mu\text{A}$
Forward Gate-Source Leakage Current	$I_{GSSF}$	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
Reverse Gate-Source Leakage Current	$I_{GSSR}$	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA
<b>ON</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	2	--	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$	--	2.75	3.4	$\Omega$
		$V_{GS} = 7.5\text{ V}, I_D = 1\text{ A}$	--	2.8		
Forward Transconductance <sup>(Note 4)</sup>	$g_{FS}$	$V_{DS} = 30\text{ V}, I_D = 1\text{ A}$	--	9	--	S
<b>DYNAMIC</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	210	--	pF
Output Capacitance	$C_{oss}$		--	32	--	pF
Reverse Transfer Capacitance	$C_{rss}$		--	3.7	--	pF
<b>SWITCHING</b>						
Turn-On Delay Time <sup>(Note 4,5)</sup>	$t_{d(on)}$	$V_{DD} = 200\text{ V}, I_D = 2\text{ A},$ $R_G = 25\ \Omega$	--	36	--	ns
Turn-On Rise Time <sup>(Note 4,5)</sup>	$t_r$		--	26	--	ns
Turn-Off Delay Time <sup>(Note 4,5)</sup>	$t_{d(off)}$		--	54	--	ns
Turn-Off Fall Time <sup>(Note 4,5)</sup>	$t_f$		--	29	--	ns
Total Gate Charge <sup>(Note 4,5)</sup>	$Q_g$	$V_{DS} = 320\text{ V}, I_D = 2\text{ A},$ $V_{GS} = 10\text{ V}$	--	4.9	--	nC
Gate-Source Charge <sup>(Note 4,5)</sup>	$Q_{gs}$		--	1	--	nC
Gate-Drain Charge <sup>(Note 4,5)</sup>	$Q_{gd}$		--	1.82	--	nC
<b>SOURCE DRAIN DIODE</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	--	--	2	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	---	--	--	8	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = 2\text{ A}$	--	--	1.5	V
Reverse Recovery Time <sup>(Note 4)</sup>	$t_{rr}$	$V_{GS} = 0\text{ V}, I_S = 2\text{ A}$ $di_F / dt = 100\text{ A}/\mu\text{s}$	--	174	--	ns
Reverse Recovery Charge <sup>(Note 4)</sup>	$Q_{rr}$		--	0.54	--	$\mu\text{C}$

Note :

1. Repeated rating : Pulse width limited by safe operating area
2.  $L=10\text{mH}, I_{AS}=2\text{A}, V_{DD}=50\text{V}, R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$
3.  $I_{SD} \leq 2\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_{DD} \leq BV_{DS}$ , Starting  $T_J=25^\circ\text{C}$
4. Pulse width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$
5. Essentially Independent of Operating Temperature Typical Characteristics

