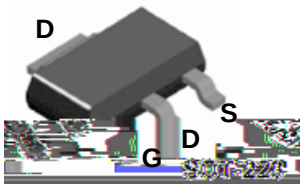
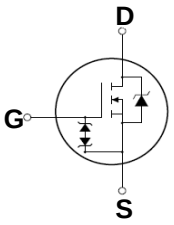
Features

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

V_{DSS} = 440 V @T_{jmax}
I_D = 2A
$R_{DS(on)}$ = 3.4 Ω(max) @ V_{GS}= 10 V





Device	Package	Marking	Remark
TMT3N40ZG	SOT-223	TMT3N40ZG	Halogen Free

Absolute Maximum Ratings

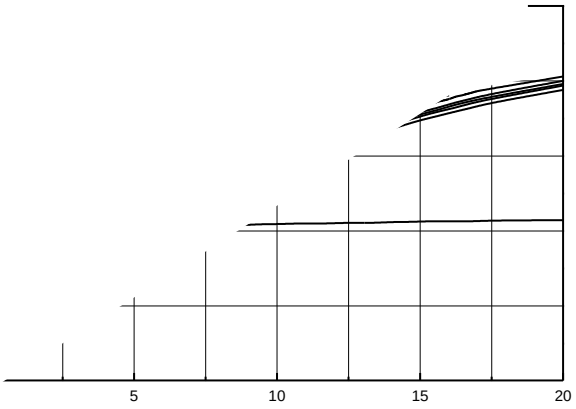
Parameter		Symbol	TMT3N40ZG	Unit
Drain-Source Voltage		V_{DS}	400	V
Gate-Source Voltage		V_{GS}	30	V
Continuous Drain Current	T_C = 25	I_D	2.0*	A
	T_C = 100		1.2*	A
Pulsed Drain Current (Note 1)		I_{DM}	8*	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	46	mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	2	A
Repetitive Avalanche Energy (Note 1)		E_{AR}	0.2	mJ
Power Dissipation	T_C = 25	P_D	2	W
	Derate above 25		0.24	W/
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	
Maximum lead temperature for soldering purposes,		T_L	300	

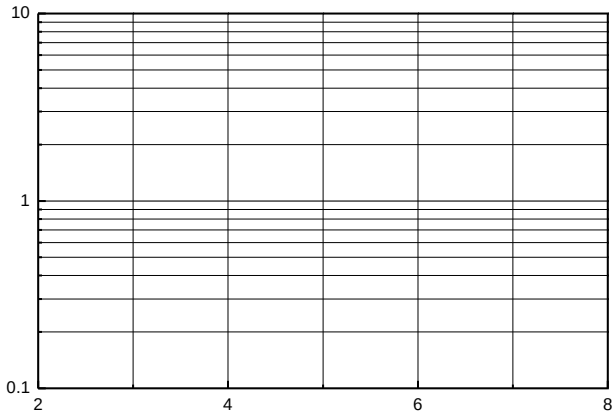
* Limited only by maximum junction temperature

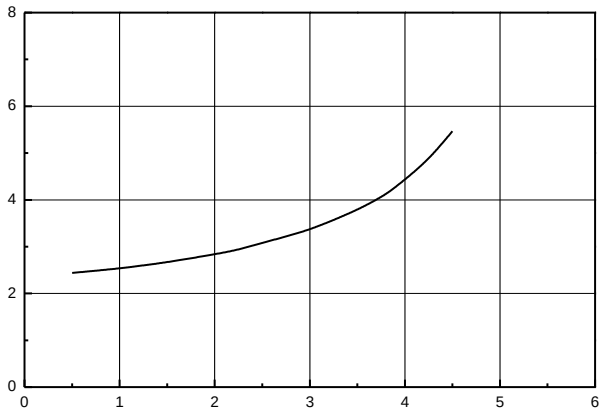
Thermal Characteristics

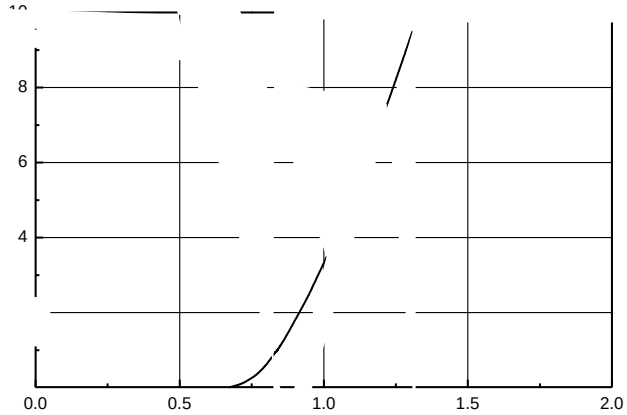
Parameter	Symbol	TMT3N40ZG	Unit
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	/W

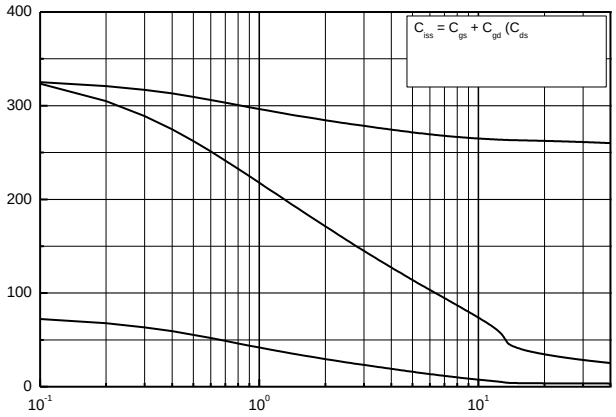
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	400	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 400 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 320 V, T_C = 125°C	--	--	10	μA
Forward Gate-Source Leakage Current	I_{GSSF}	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	μA
Reverse Gate-Source Leakage Current	I_{GSSR}	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	μA
ON						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	2	--	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 1 A	--	2.75	3.4	Ω
Forward Transconductance (Note 4) 58.77	g_{FS}	V_{DS} = 30 V, I_D = 1 A	--	9	--	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	210	--	pF
Output Capacitance	C_{oss}		--	32	--	pF
Reverse Transfer Capacitance	C_{rss}		--	3.7	--	pF
SWITCHING						
Turn-On Delay Time (Note 4,5)	$t_{d(on)}$	V_{DD} = 200 V, I_D = 2 A,	--	8	--	ns
Turn-On Rise Time (Note 4,5)	t					

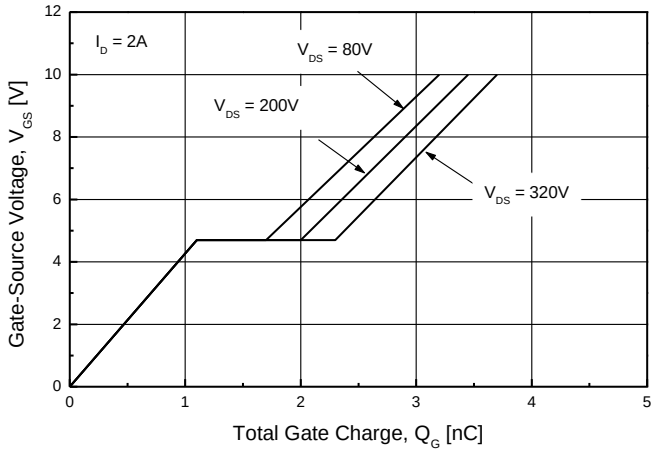

5
10
15
20

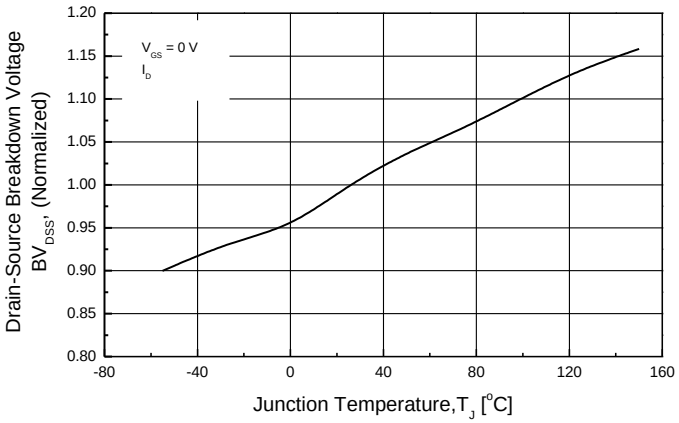

10
1
0.1
2
4
6
8

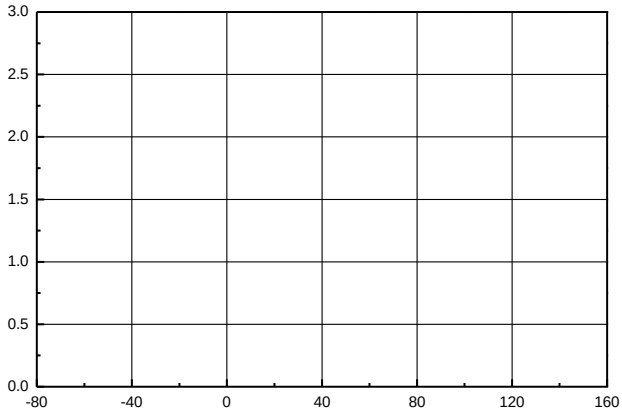

8
6
4
2
0
0
1
2
3
4
5
6

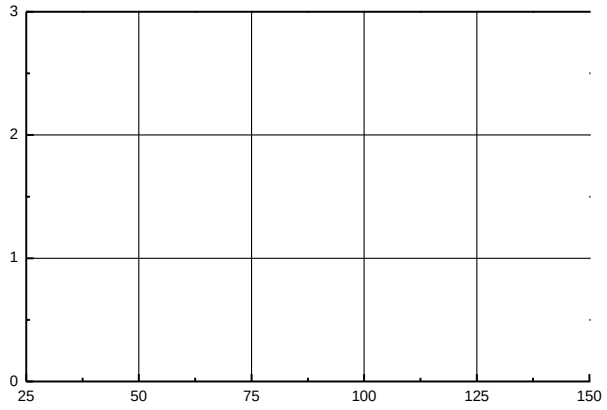

8
6
4
0.0
0.5
1.0
1.5
2.0

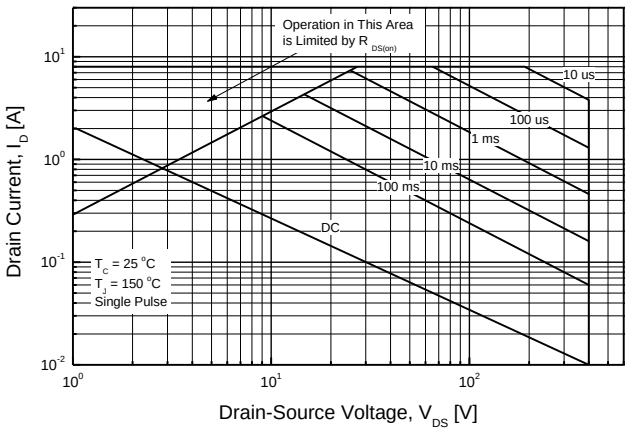

400
300
200
100
0
10^{-1}
10^{0}
10^{1}
$C_{iss} = C_{gs} + C_{gd}$ (C_{ds}

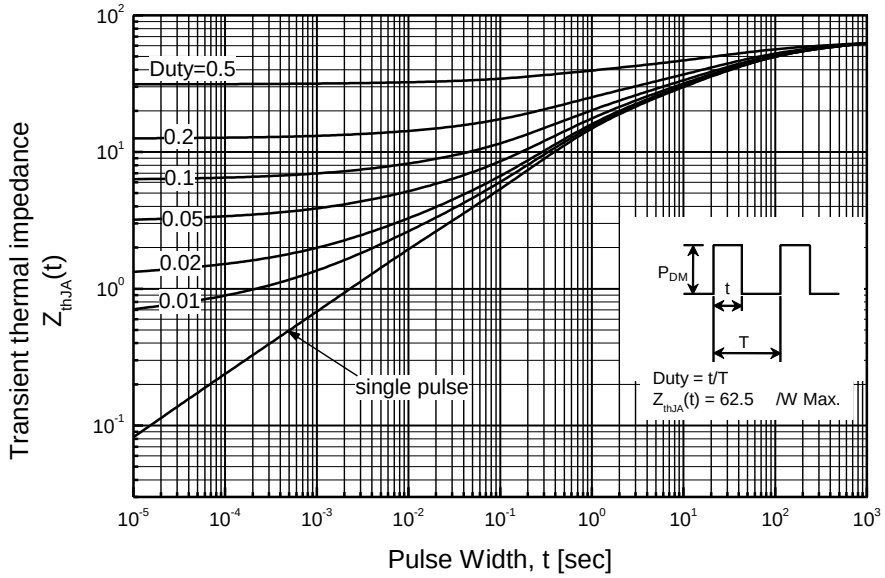

I_D = 2A
V_{DS} = 80V
V_{DS} = 200V
V_{DS} = 320V
Gate-Source Voltage, V_{GS} [V]
Total Gate Charge, Q_G [nC]
12
10
8
6
4
2
0
0
1
2
3
4
5


Drain-Source Breakdown Voltage
BV_DSS, (Normalized)
V_GS = 0 V
I_D
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
-80
-40
0
40
80
120
160
Junction Temperature,T_J [°C]


3.0
2.5
2.0
1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160


3
2
1
0
25
50
75
100
125
150


Operation in This Area
is Limited by R DS(on)
10 us
100 us
1 ms
10 ms
100 ms
DC
T_C = 25 °C
T_J = 150 °C
Single Pulse
Drain Current, I_D [A]
Drain-Source Voltage, V_DS [V]


Duty=0.5
0.2
0.1
0.05
0.02
0.01
single pulse
P_DM
t
T
Duty = t/T
Z_thJA(t) = 62.5 /W Max.
Transient thermal impedance
Z_thJA(t)
Pulse Width, t [sec]