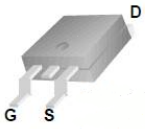
Features

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

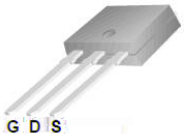
N-channel MOSFET

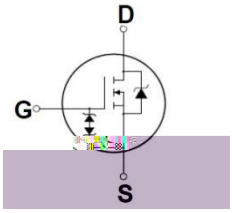
BV_{DSS}	I_D	$R_{DS(on)}$
250V	16A	<0.24Ω

D-PAK



I-PAK





Device	Package	Marking	Remark
TMD16N25Z / TMU16N25Z	D-PAK/I-PAK	TMD16N25Z / TMU16N25Z	RoHS
TMD16N25ZG / TMU16N25ZG	D-PAK/I-PAK	TMD16N25ZG / TMU16N25ZG	Halogen Free

Absolute Maximum Ratings

Parameter		Symbol	TMD16N25Z(G)/TMU16N25Z(G)	Unit
Drain-Source Voltage		V_{DSS}	250	V
Gate-Source Voltage		V_{GS}	30	V
Continuous Drain Current	T_C = 25	I_D	16	A
	T_C = 100		8.3	A
Pulsed Drain Current (Note 1)		I_{DM}	64	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	368	mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	16	A
Repetitive Avalanche Energy (Note 1)		E_{AR}	9.39	mJ
Power Dissipation	T_C = 25	P_D	93.9	W
	Derate above 25		0.75	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

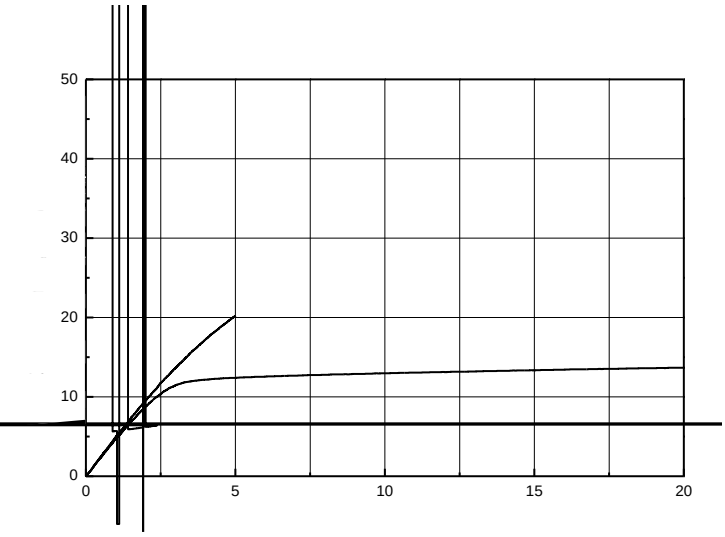
Thermal Characteristics

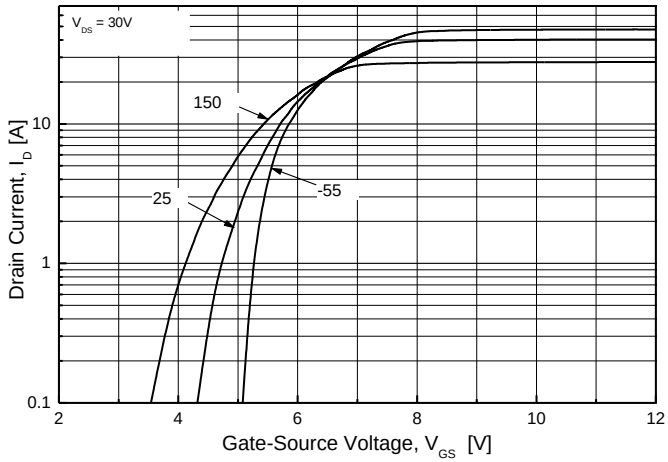
Parameter	Symbol	TMD16N25Z(G)/TMU16N25Z(G)	Unit
Maximum Thermal resistance, Junction-to-Case	$R_{\theta JC}$	1.33	/W
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	110	/W

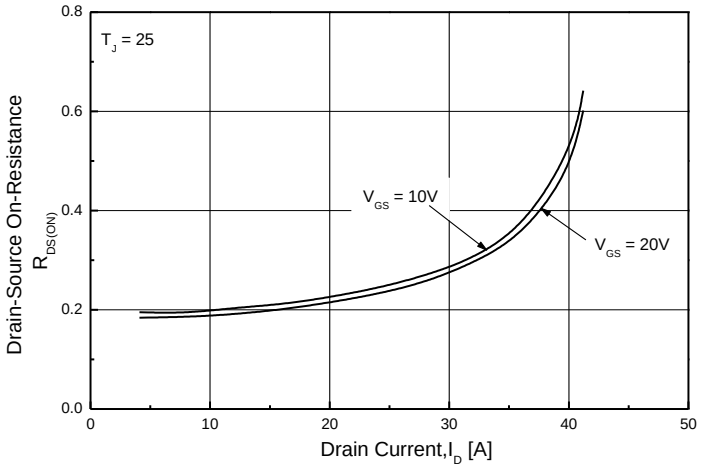
Electrical Characteristics : T_C=25 , unless otherwise noted

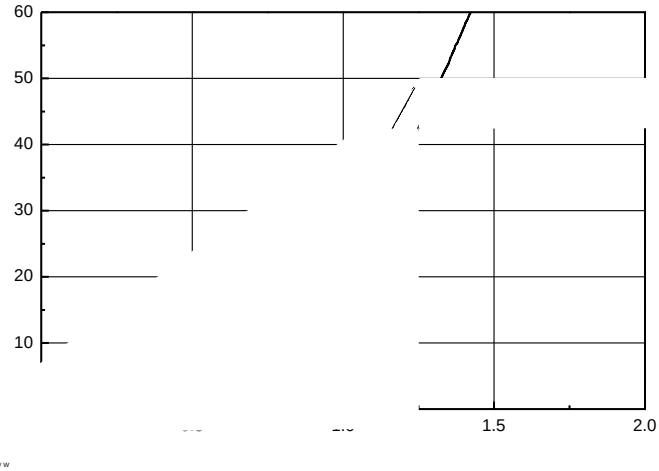
Parameter						

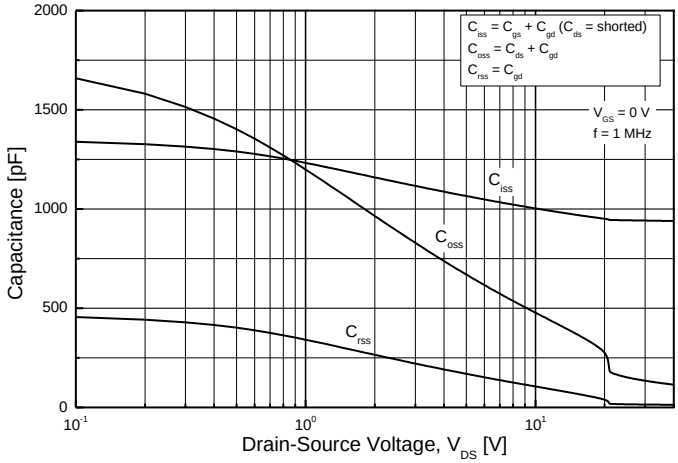
Note :
1. Repeated rating : Pulse width limited by safe operating area
2. L=2.3mH, I_{AS} = 16A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 16A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

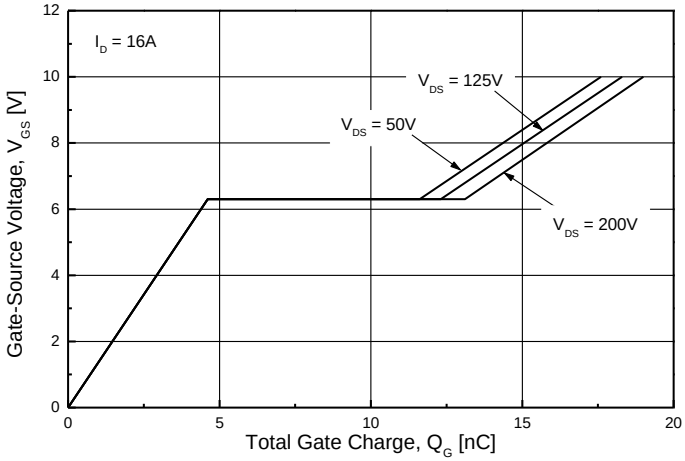

50
40
30
20
10
0
0
5
10
15
20

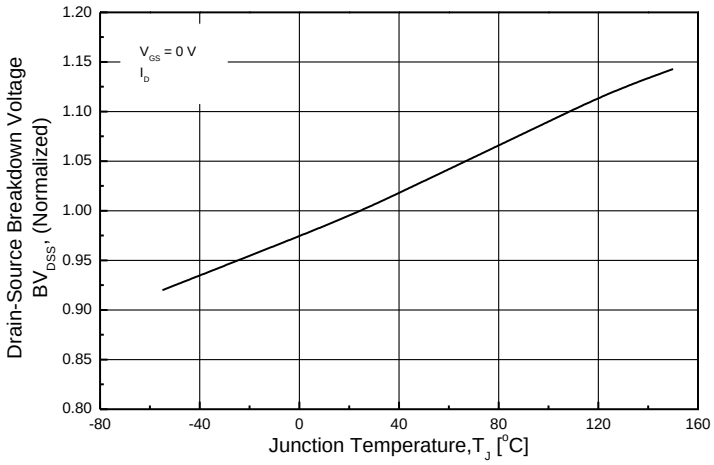

V_DS = 30V
150
25
-55
Drain Current, I_D [A]
10
1
0.1
2
4
6
8
10
12
Gate-Source Voltage, V_GS [V]

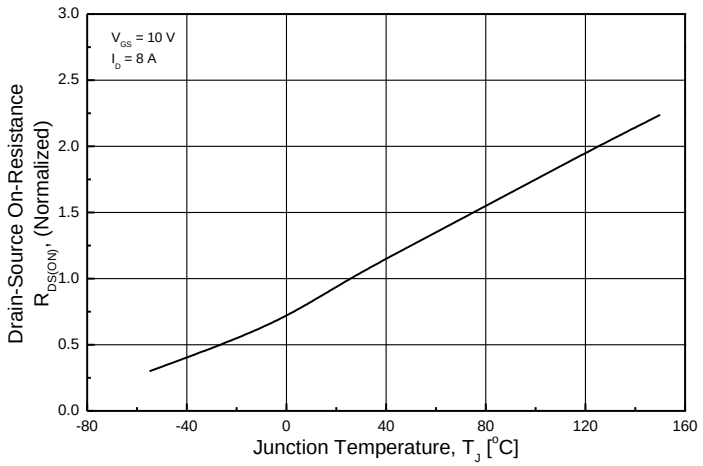

T_J = 25
V_GS = 10V
V_GS = 20V
Drain-Source On-Resistance
R_DS(ON)
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
Drain Current,I_D [A]

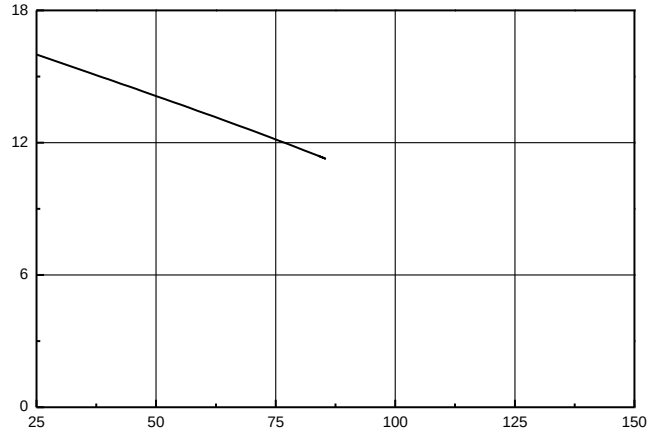

60
50
40
30
20
10
1.5
2.0

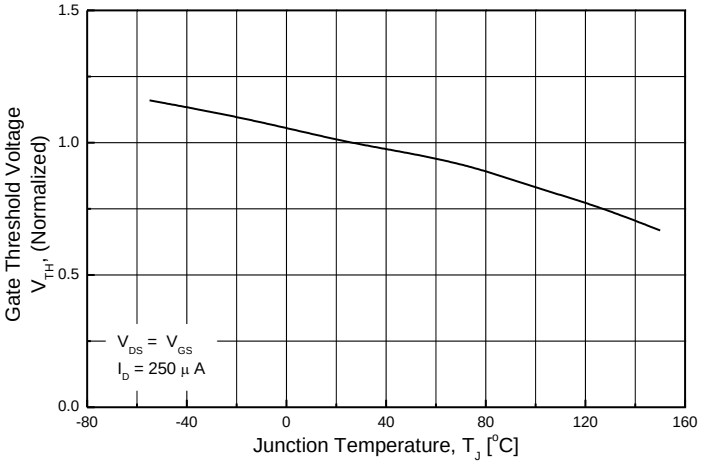

C_iss = C_gs + C_gd (C_ds = shorted)
C_oss = C_ds + C_gd
C_rss = C_gd
V_GS = 0 V
f = 1 MHz
C_iss
C_oss
C_rss
Capacitance [pF]
2000
1500
1000
500
0
10^-1
10^0
10^1
Drain-Source Voltage, V_DS [V]

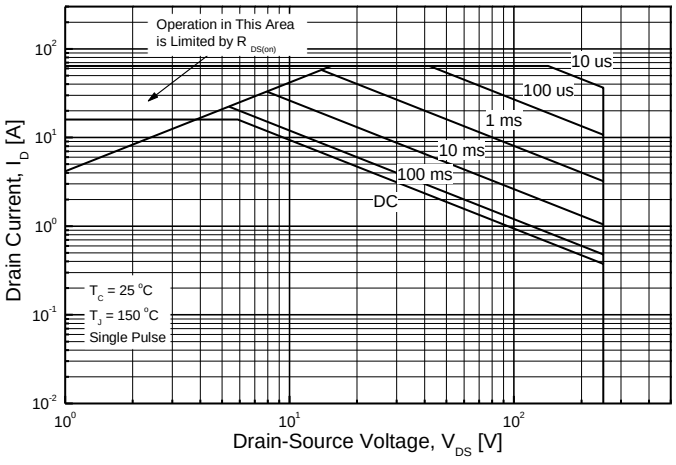

I_D = 16A
V_DS = 125V
V_DS = 50V
V_DS = 200V
Gate-Source Voltage, V_GS [V]
12
10
8
6
4
2
0
0
5
10
15
20
Total Gate Charge, Q_G [nC]

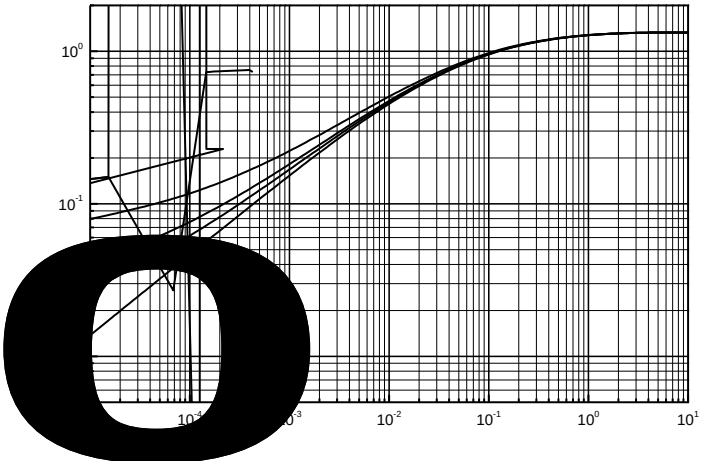

Drain-Source Breakdown Voltage
BV_{DSS}, (Normalized)
V_{GS} = 0 V
I_D
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
-80
-40
0
40
80
120
160
Junction Temperature,T_J [°C]


Drain-Source On-Resistance
$R_{DS(ON)}$, (Normalized)
V_{GS} = 10 V
I_D = 8 A
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160
Junction Temperature, T_J [°C]

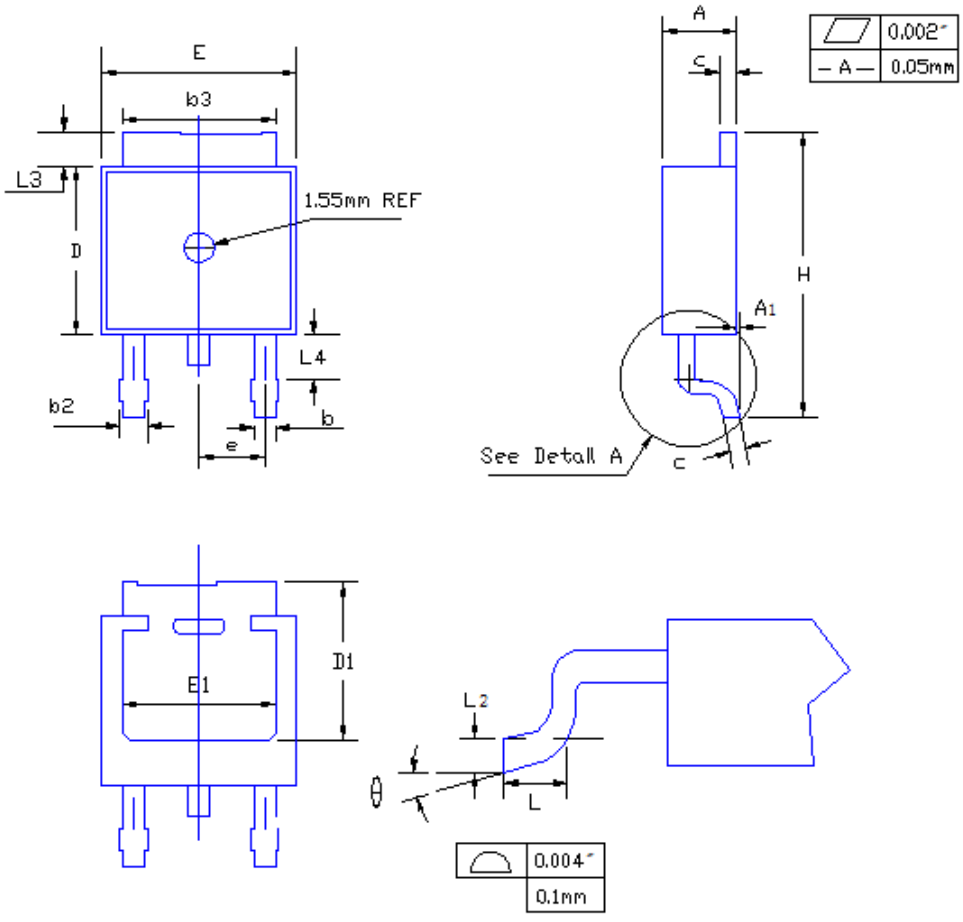

18
12
6
0
25
50
75
100
125
150


Gate Threshold Voltage
V_{TH}, (Normalized)
V_{DS} = V_{GS}
I_D = 250 μ A
1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160
Junction Temperature, T_J [°C]


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]
10^2
10^1
10^0
10^{-1}
10^{-2}
10^0
10^1
10^2
Drain-Source Voltage, V_{DS} [V]


10^0
10^{-1}
10^{-2}
10^{-1}
10^0
10^1

TO-252 (D-PAK) MECHANICAL DATA



SYMBOL	MILLIMETERS	
	MIN	MAX
A	2.19	2.38
A1	–	0.13
b	0.64	0.89
b2	0.84	1.14
b3	5.21	5.46
c	0.46	0.61
D	5.97	6.22
D1	5.21	—
E	6.35	6.73
E1	4.83	—
e	2.29BSC	
H	9.65	10.41
L	1.40	1.78
L2	0.51BSC	
L3	0.89	1.27
L4	0.64	1.01
θ	0	8

TO-251 (I-PAK) MECHANICAL DATA