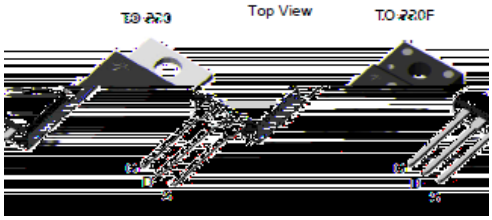
TMP16N25Z(G)/TMPF16N25Z(G)

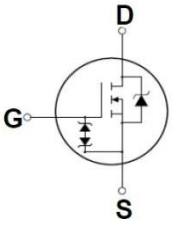
N-channel MOSFET

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

Features

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





Device	Package	Marking	Remark
TMP16N25Z / TMPF16N25Z	TO-220 / TO-220F	TMP16N25Z / TMPF16N25Z	RoHS
TMP16N25ZG / TMPF16N25ZG	TO-220 / TO-220F	TMP16N25ZG / TMPF16N25ZG	Halogen Free

Absolute Maximum Ratings

Parameter		Symbol	TMP16N25Z(G)	TMPF16N25Z(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	16 *	A
	T_C = 100		8.3	8.3 *	A
Pulsed Drain Current (Note 1)		I_{DM}	64	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	30.4	W
	Derate above 25		0.75	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

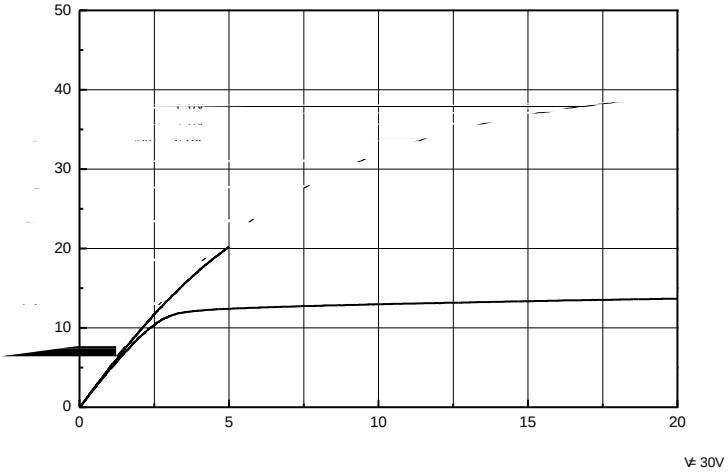
Thermal Characteristics

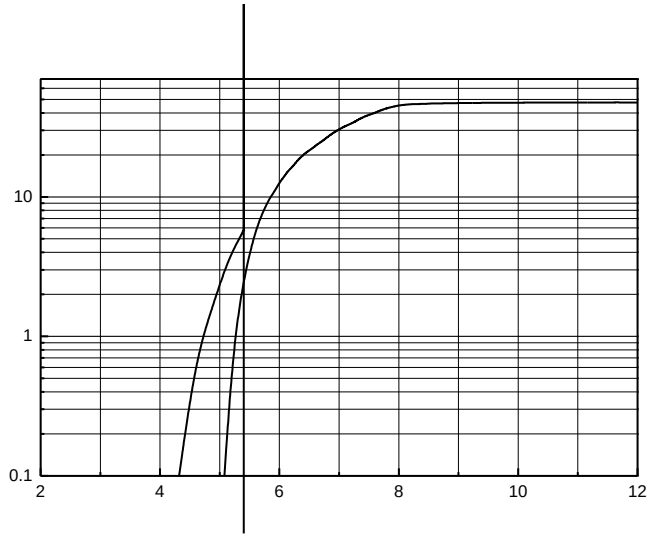
Parameter	Symbol	TMP16N25Z(G)	TMPF16N25Z(G)	Unit
Maximum Thermal resistance, Junction-to-Case	$R_{\theta JC}$	1.33	4.1	/W
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	62.5	/W

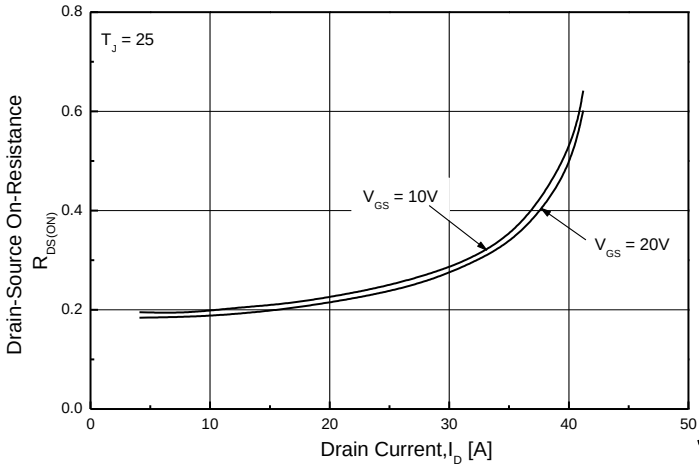
Electrical Characteristics : T_C=25 , unless otherwise noted

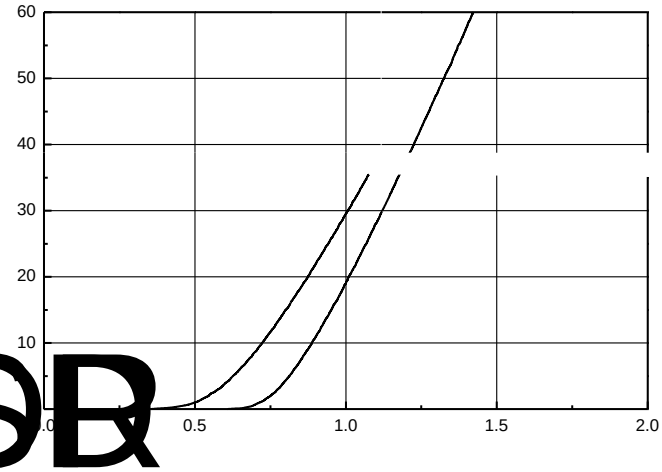
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 µA	250	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250 V, V_{GS} = 0 V	--	--	1	µA
		V_{DS} = 200 V, T_C = 125°C	--	--	10	µA
Forward Gate-Source Leakage Current	I_{GSSF}	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	3	--	5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 8 A	--	0.2	0.24	Ω
Forward Transconductance	g_{fs} (Note 4)	V_{DS} = 40 V, I_D = 8 A	--	9	--	S

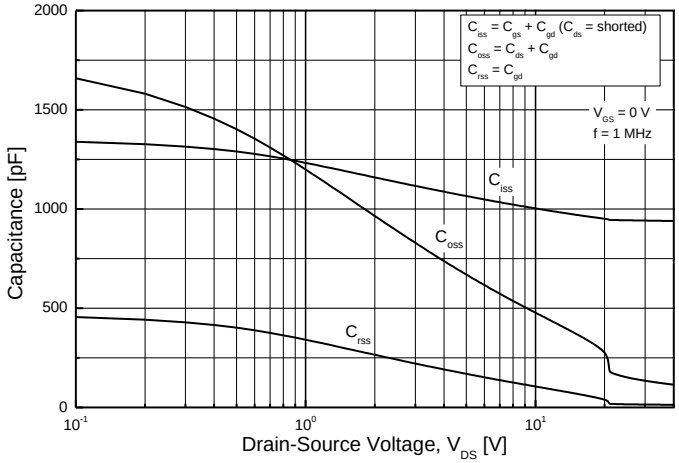
Note :
1. Repeated rating : Pulse width limited by safe operating area
2. L=2.3mH, I_{AS} = 16A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 16A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

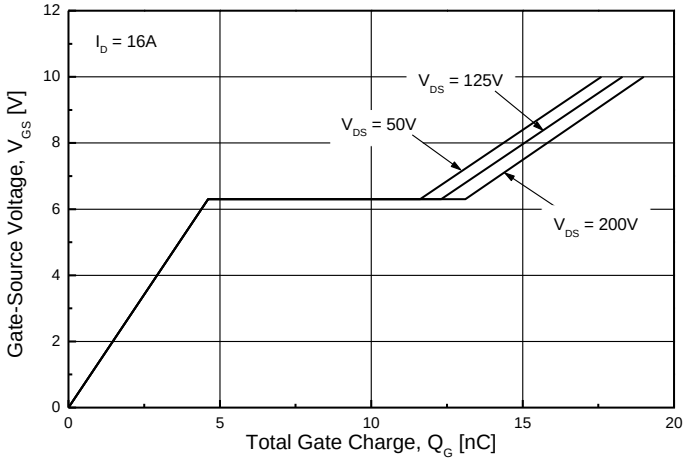

50
40
30
20
10
0
0
5
10
15
20
V= 30V

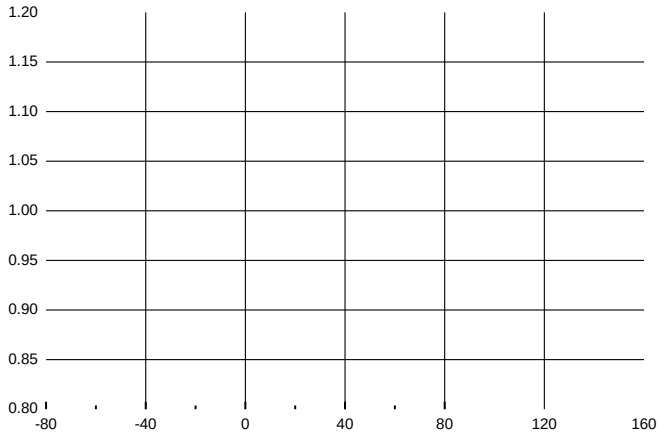

10
1
0.1
2
4
6
8
10
12

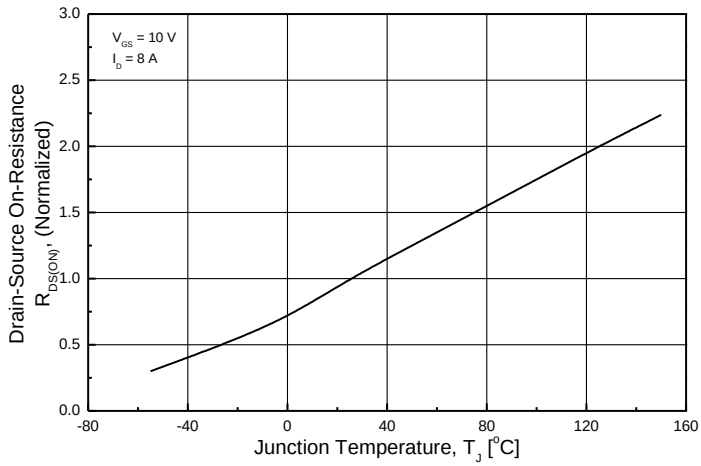

T_J = 25
V_GS = 10V
V_GS = 20V
Drain-Source On-Resistance
R_DS(ON)
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
Drain Current,I_D [A]

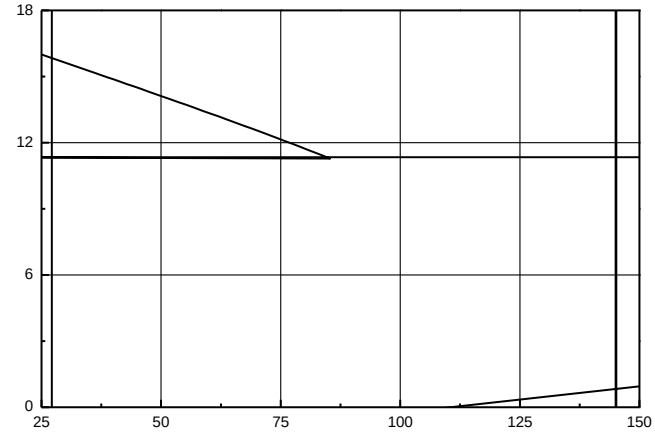

60
50
40
30
20
10
0.5
1.0
1.5
2.0

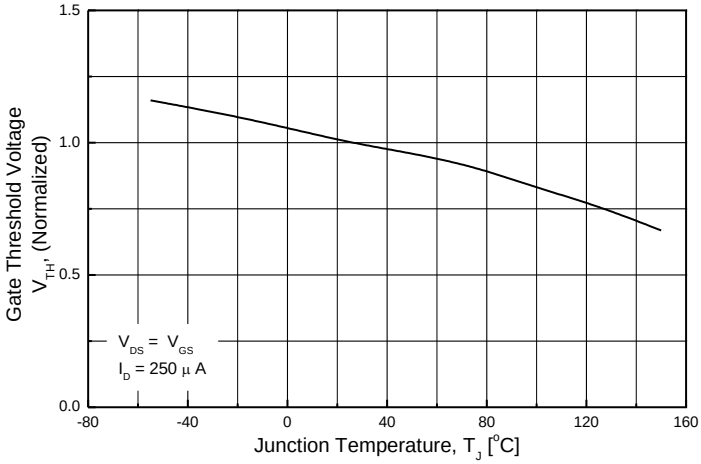

C_iss = C_gs + C_gd (C_ds = shorted)
C_oss = C_ds + C_gd
C_rss = C_gd
V_GS = 0 V
f = 1 MHz
C_iss
C_oss
C_rss
Capacitance [pF]
2000
1500
1000
500
0
10^-1
10^0
10^1
Drain-Source Voltage, V_DS [V]


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]

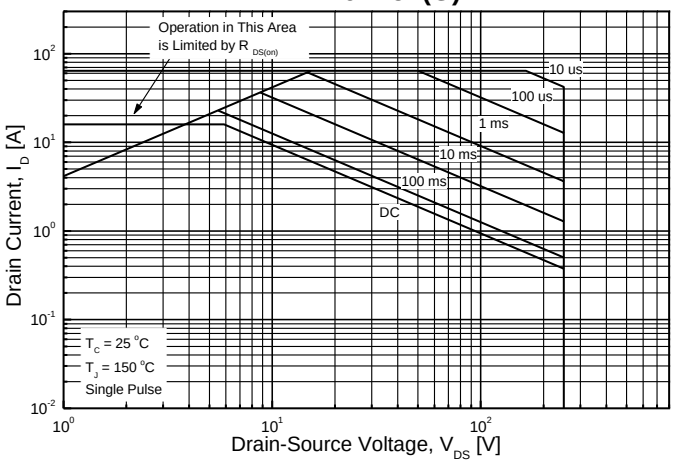




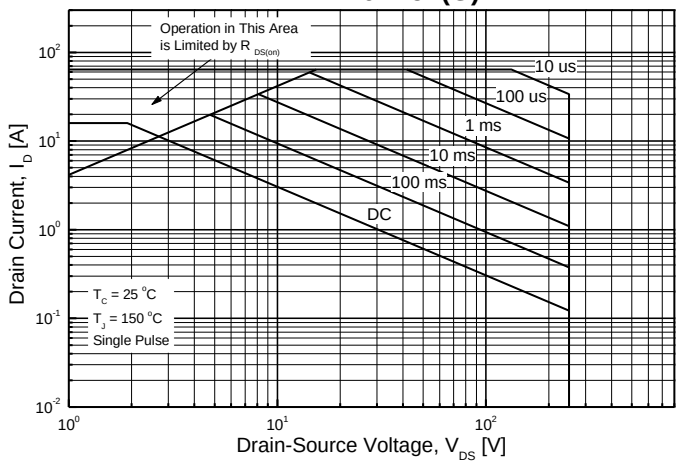




TMP16N25Z(G)



TMPF16N25Z(G)



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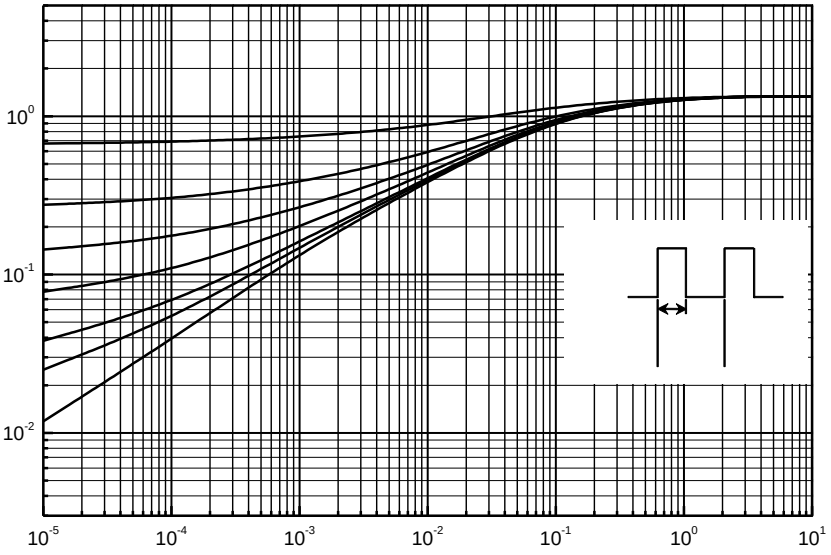
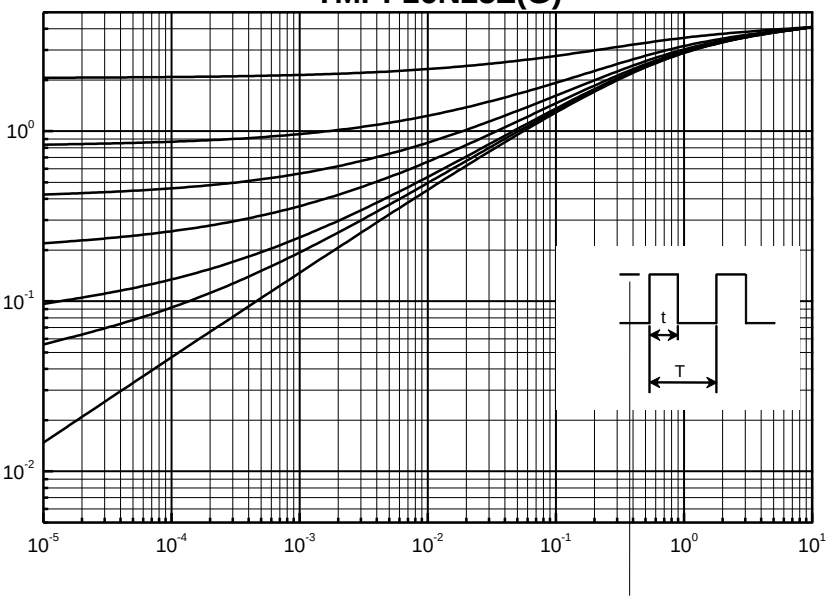
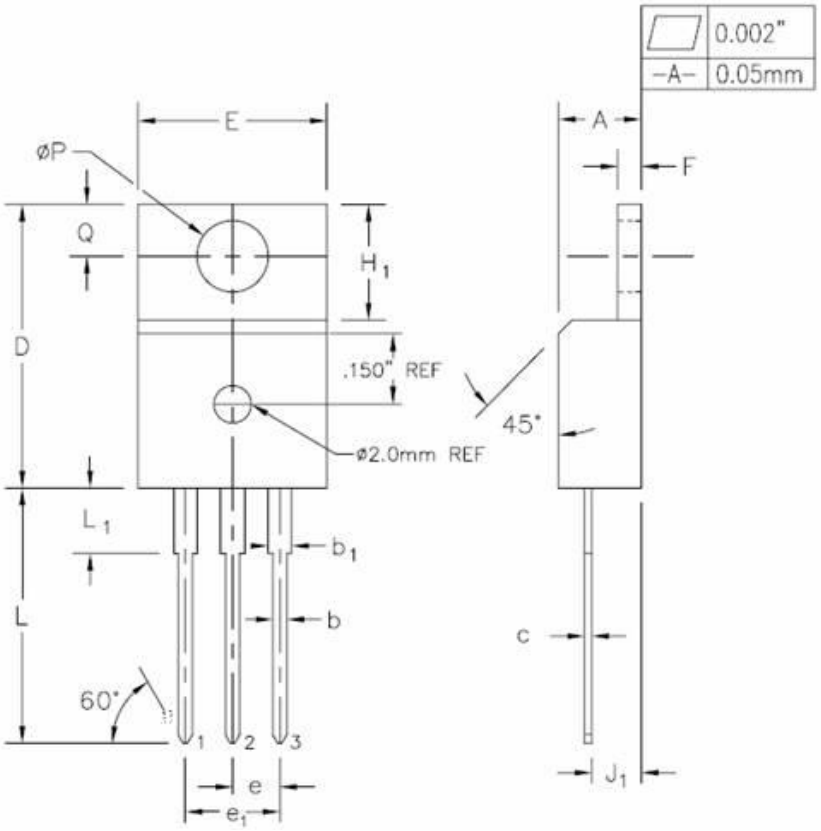


TMPF16N25Z(G)



TO-220AB-3L MECHANICAL DATA



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.170	0.180	4.32	4.57	
b	0.028	0.036	0.71	0.91	
b_1	0.045	0.055	1.15	1.39	
c	0.014	0.021	0.36	0.53	
D	0.590	0.610	14.99	15.49	
E	0.395	0.415	10.04	10.54	
e	0.100 TYP.		2.54 TYP.		
e_1	0.200 BSC		5.08 BSC		
F	0.048	0.054	1.22	1.37	
H_1	0.235	0.255	5.97	6.47	
J_1	0.100	0.110	2.54	2.79	
L	0.530	0.550	13.47	13.97	
L_1	0.130	0.150	3.31	3.81	
2 øP	0.149	0.153	3.79	3.88	
Q	0.102	0.112	2.60	2.84	

TO-220F-3L MECHANICAL DATA