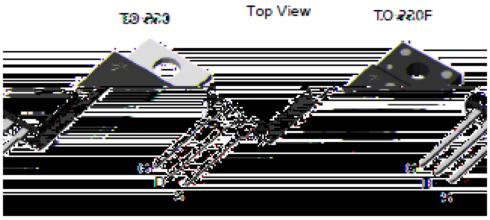
Features

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



Device	Package	Marking	Remark
TMP2N65AZ / TMPF2N65AZ	TO-220 / TO-220F	TMP2N65AZ / TMPF2N65AZ	RoHS
TMP2N65AZG / TMPF2N65AZG	TO-220 / TO-220F		

Absolute Maximum Ratings

Parameter		Symbol	TMP2N65AZ(G)	TMPF2N65AZ(G)	Unit
Drain-Source Voltage		V_{DSS}	650		V
Gate-Source Voltage		V_{GS}	30		V
Continuous Drain Current	T_C = 25	I_D	1.8	1.8 *	A
	T_C = 100		1.38	1.38 *	A
Pulsed Drain Current (Note 1)		I_{DM}	7.2	7.2 *	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	77		mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	1.8		A
Repetitive Avalanche Energy (Note 1)		E_{AR}	5.2		mJ
Power Dissipation	T_C = 25	P_D	52.0	17.3	W
	Derate above 25		0.41	0.13	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

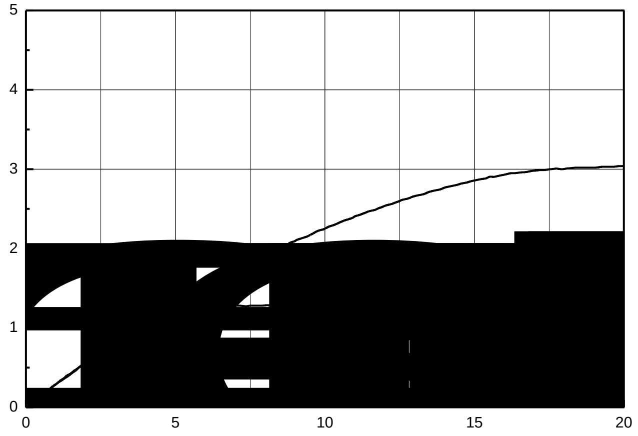
Thermal Characteristics

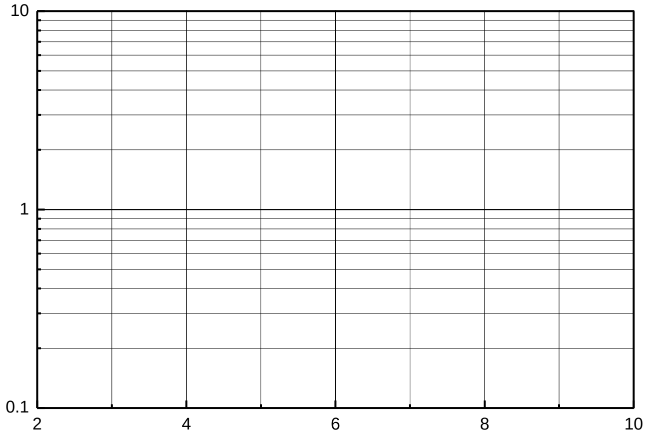
Parameter	Symbol	TMP2N65AZ(G)	TMPF2N65AZ(G)	Unit
Maximum Thermal resistance, Junction-to-Case	$R_{\theta JC}$	2.4	7.2	/W
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	62.5	/W

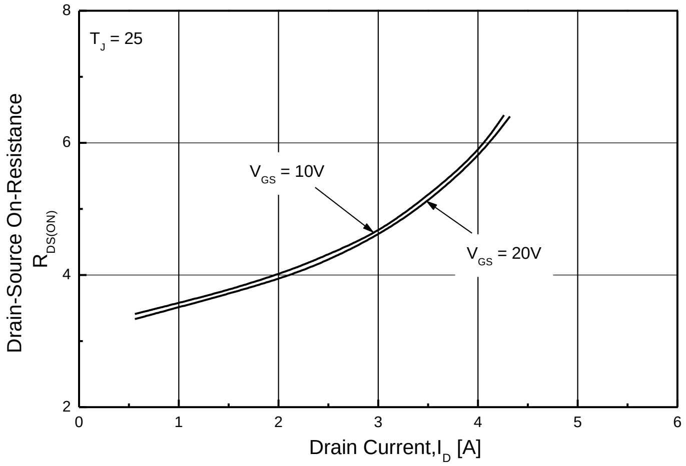
Electrical Characteristics : T_C=25 , unless otherwise noted

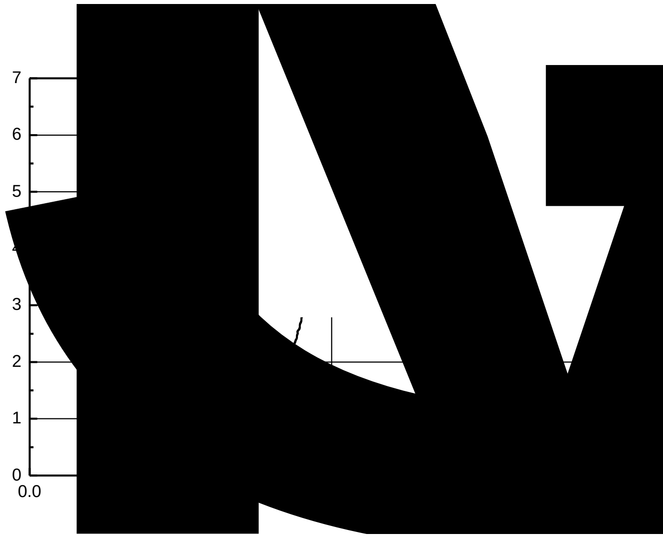
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage						

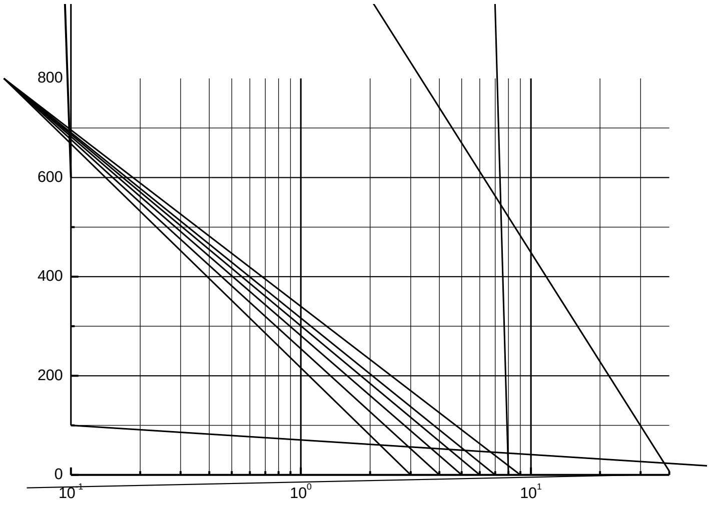
Note :
1. Repeated rating : Pulse width limited by safe operating area
2. L=44mH, I_{AS} = 1.8A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 1.8A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

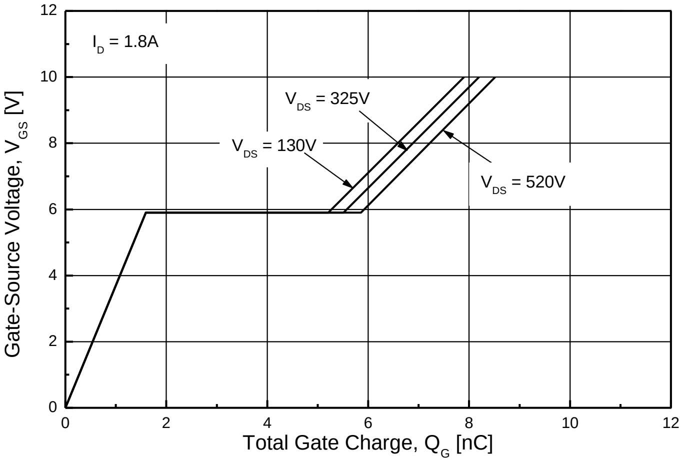

0
1
2
3
4
5
0
5
10
15
20

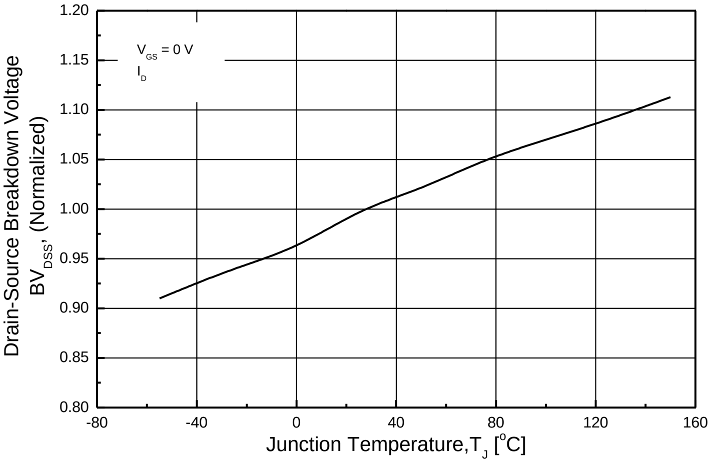

0.1
1
10
2
4
6
8
10

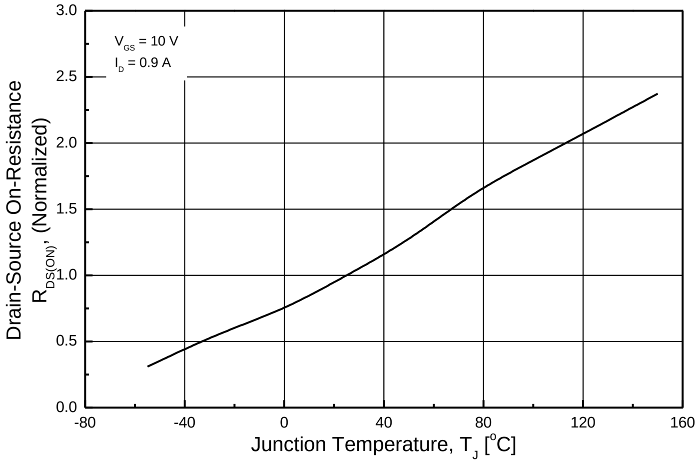

T$_J$ = 25
V$_{GS}$ = 10V
V$_{GS}$ = 20V
Drain-Source On-Resistance
R$_{DS(ON)}$
Drain Current,I$_D$ [A]
2
4
6
8
0
1
2
3
4
5
6

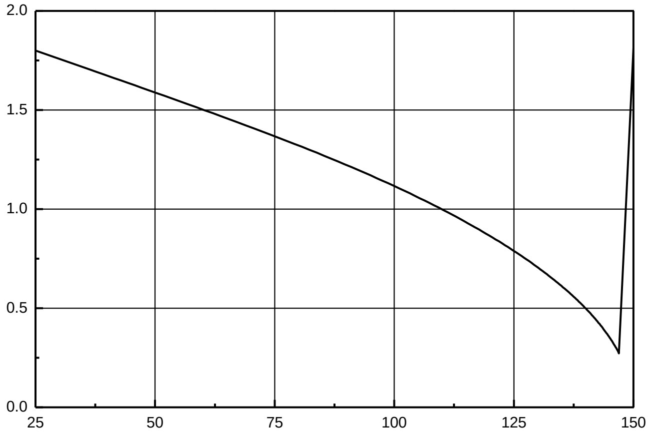

0
1
2
3
4
5
6
7
0.0

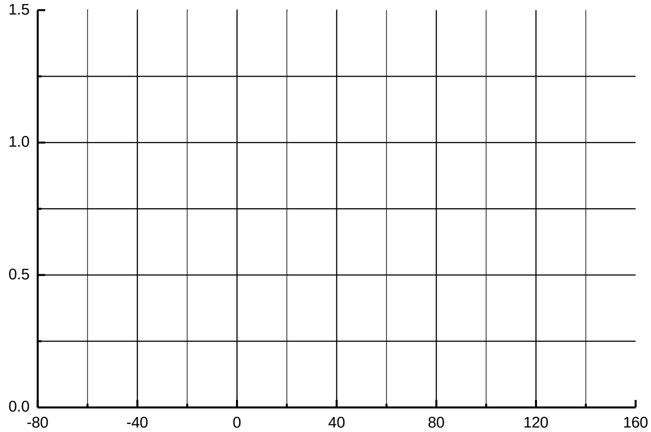

0
200
400
600
800
10^{-1}
10^0
10^1

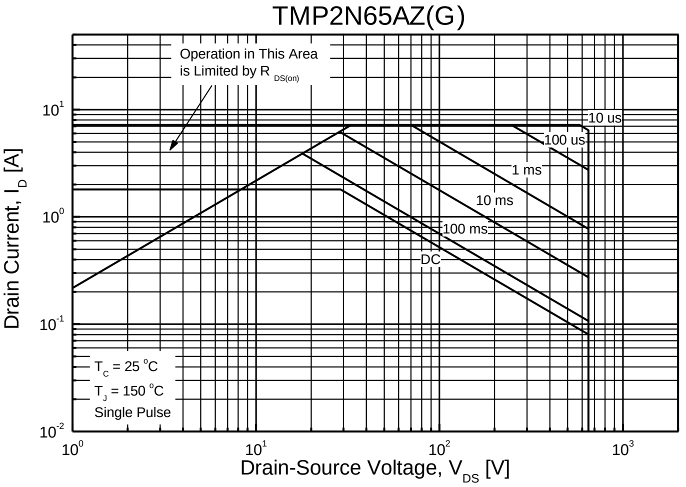

I$_D$ = 1.8A
V$_{DS}$ = 325V
V$_{DS}$ = 130V
V$_{DS}$ = 520V
Gate-Source Voltage, V$_{GS}$ [V]
Total Gate Charge, Q$_G$ [nC]
0
2
4
6
8
10
12
0
2
4
6
8
10
12

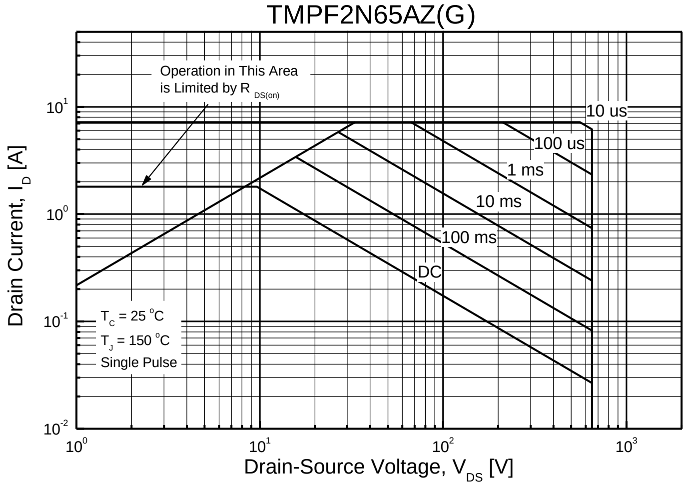

V_GS = 0 V
I_D
Drain-Source Breakdown Voltage BV_DSS, (Normalized)
Junction Temperature,T_J [°C]
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
-80
-40
0
40
80
120
160


V_GS = 10 V
I_D = 0.9 A
Drain-Source On-Resistance R_DS(ON), (Normalized)
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

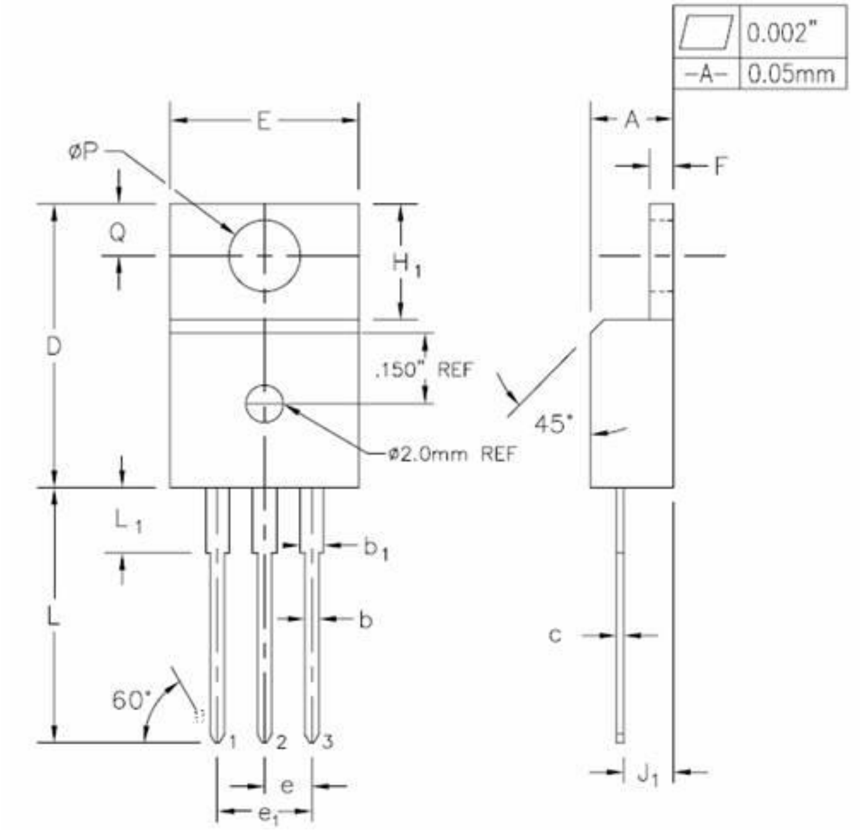

2.0
1.5
1.0
0.5
0.0
25
50
75
100
125
150


1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160


TMP2N65AZ(G)
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]
10^1
10^0
10^-1
10^-2
10^0
10^1
10^2
10^3

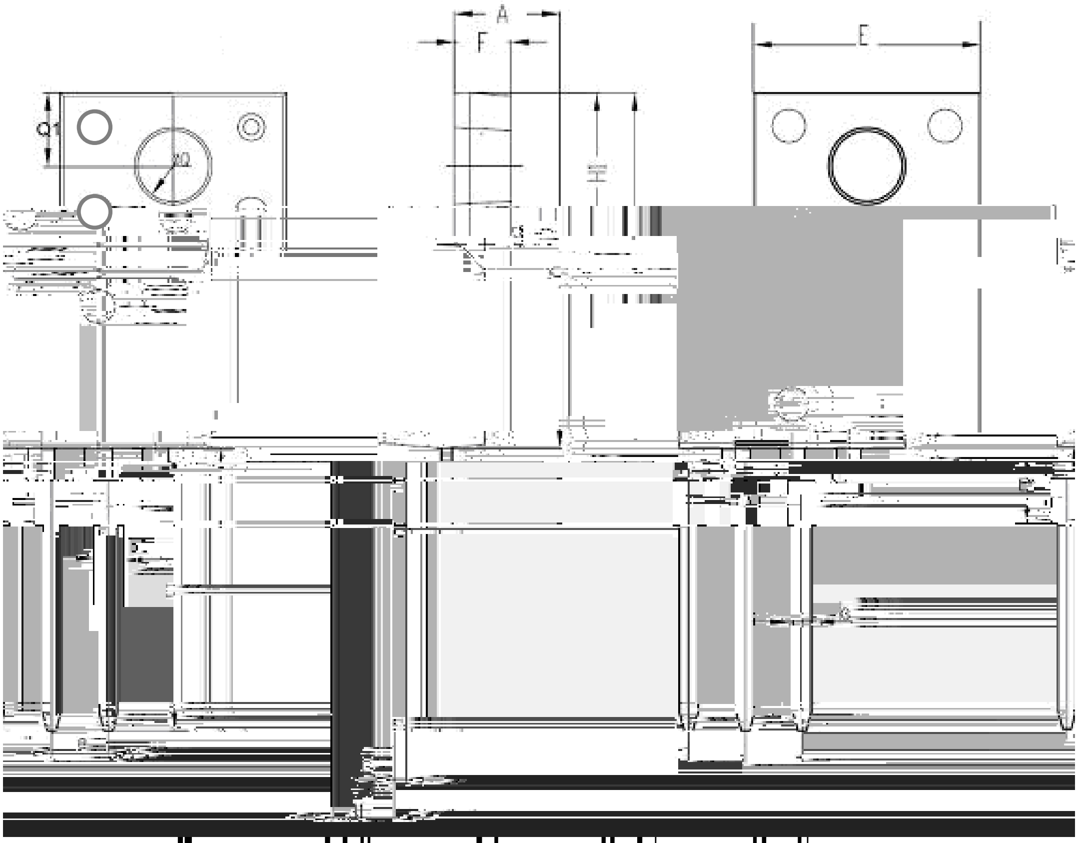

TMPF2N65AZ(G)
Operation in This Area is Limited by R DS(on)
10 us
100 us
1 ms
10 ms
100 ms
DC
T_C = 25 °C
T_J = 150 °C
Single Pulse
Drain Current, I_D [A]
Drain-Source Voltage, V_DS [V]
10^1
10^0
10^-1
10^-2
10^0
10^1
10^2
10^3

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	0.410	[illegible]	[illegible]	
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



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