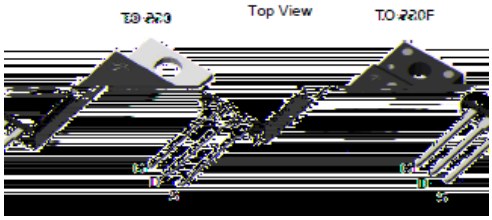
TMP10N65A(G)/TMPF10N65A(G)

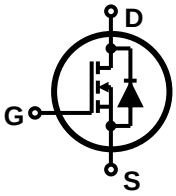
N-channel MOSFET

BV_{DSS}	I_D	$R_{DS(on)}$
650V	9.5A	<0.82Ω

Features

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





Device	Package	Marking	Remark
TMP10N65A / TMPF10N65A	TO-220 / TO-220F	TMP10N65A / TMPF10N65A	RoHS
TMP10N65AG / TMPF10N65AG	TO-220 / TO-220F	TMP10N65AG / TMPF10N65AG	Halogen Free

Absolute Maximum Ratings

Parameter		Symbol	TMP10N65A(G)	TMPF10N65AG)	Unit
Drain-Source Voltage		V_{DSS}	650		V
Gate-Source Voltage		V_{GS}	30		V
Continuous Drain Current	T_C = 25	I_D	9.5	9.5 *	A
	T_C = 100		5.83	5.83 *	A
Pulsed Drain Current (Note 1)		I_{DM}	38	38 *	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	690		mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	9.5		A
Repetitive Avalanche Energy (Note 1)		E_{AR}	19.8		mJ
Power Dissipation	T_C = 25	P_D	198	52	W
	Derate above 25		1.58	0.41	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

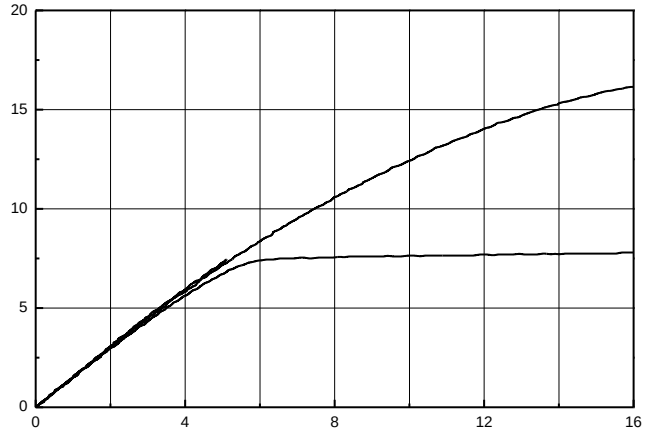
Thermal Characteristics

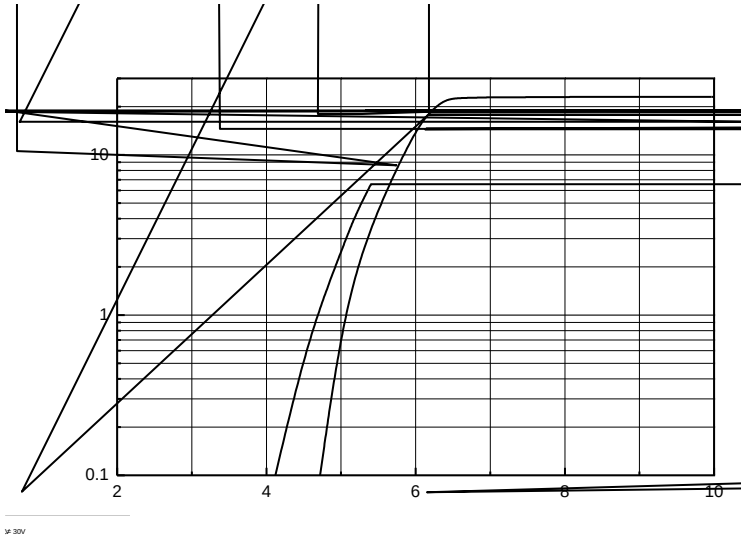
Parameter	Symbol	TMP10N65A(G)	TMPF10N65A(G)	Unit
Maximum Thermal resistance, Junction-to-Case	$R_{\theta JC}$	0.63	2.4	/W
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	62.5	/W

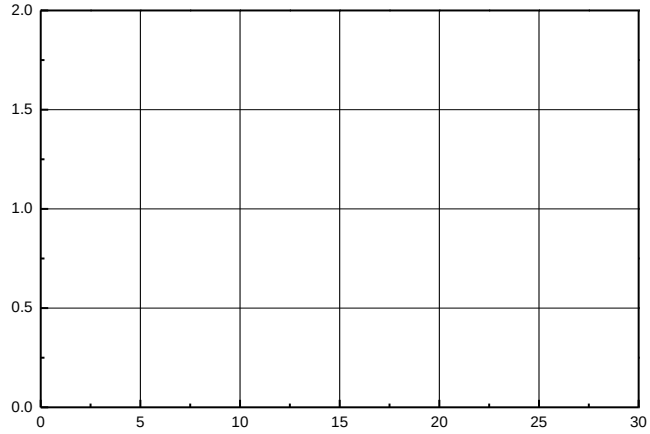
Electrical Characteristics : T_C=25 , unless otherwise noted

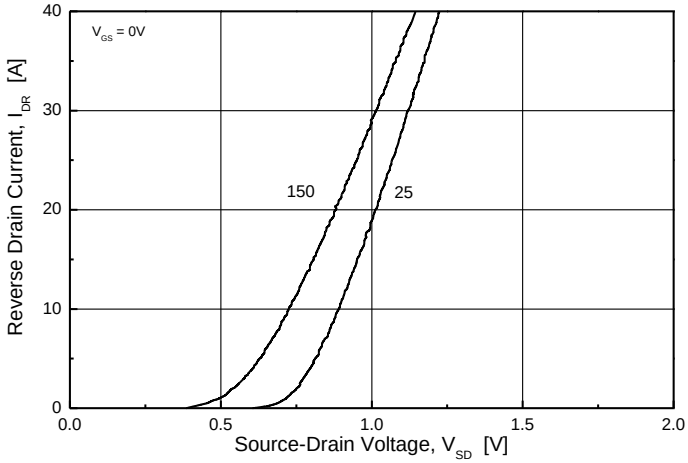
Note :

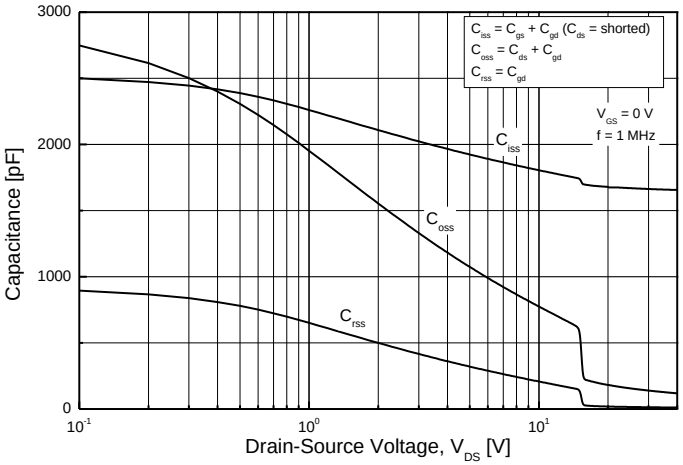
1. Repeated rating : Pulse width limited by safe operating area
2. L=14.3mH, I_{AS} = 9.5A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 9.5A, di/dt μs , V_{DD} $_{DS}$, Starting T_J= 25
μ
5. Essentially Independent of Operating Temperature Typical Characteristics

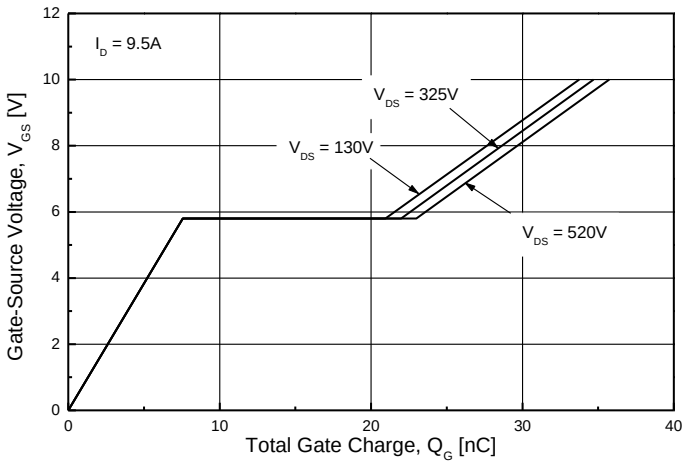

20
15
10
5
0
0
4
8
12
16

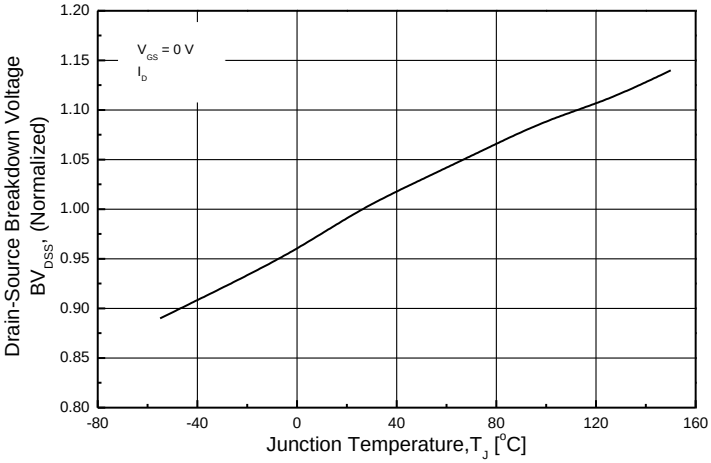

10
1
0.1
2
4
6
8
10

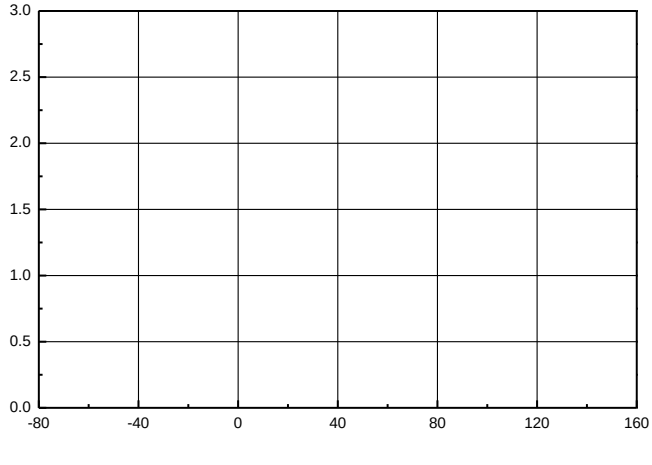

2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
25
30

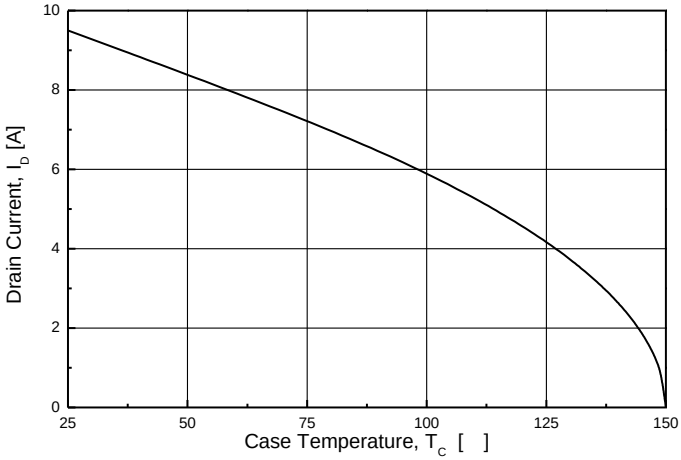

V_{GS} = 0V
150
25
Reverse Drain Current, I_{DR} [A]
Source-Drain Voltage, V_{SD} [V]
40
30
20
10
0
0.0
0.5
1.0
1.5
2.0

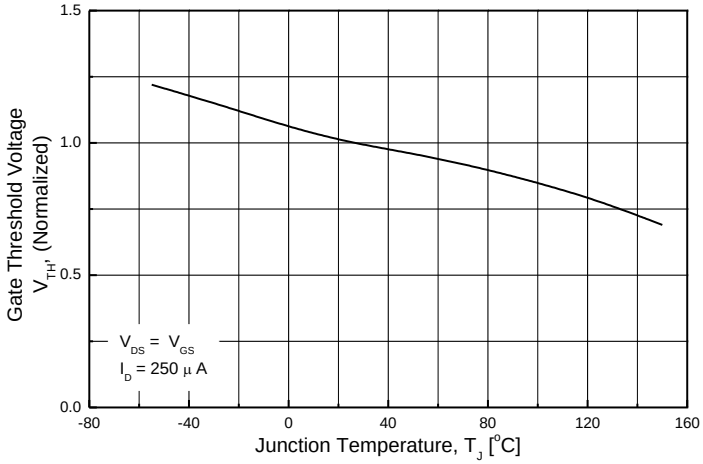

$C_{iss} = C_{gs} + C_{gd}$ (C_{ds} = shorted)
$C_{oss} = C_{ds} + C_{gd}$
$C_{rss} = C_{gd}$
V_{GS} = 0 V
f = 1 MHz
C_{iss}
C_{oss}
C_{rss}
Capacitance [pF]
Drain-Source Voltage, V_{DS} [V]
3000
2000
1000
0
10^{-1}
10^{0}
10^{1}

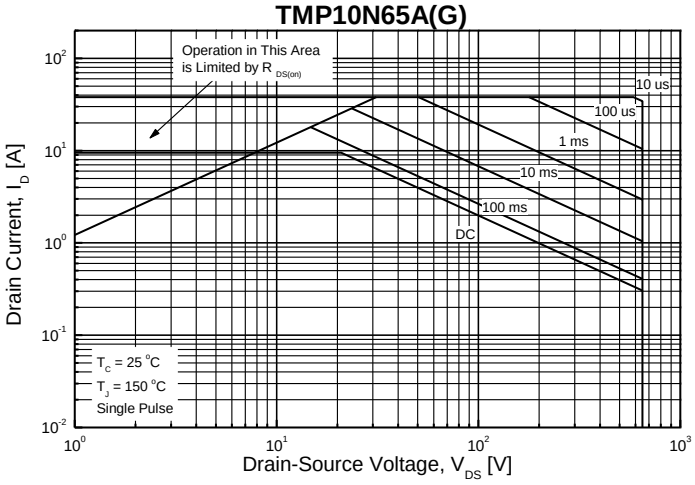

I_D = 9.5A
V_{DS} = 325V
V_{DS} = 130V
V_{DS} = 520V
Gate-Source Voltage, V_{GS} [V]
Total Gate Charge, Q_G [nC]
12
10
8
6
4
2
0
0
10
20
30
40

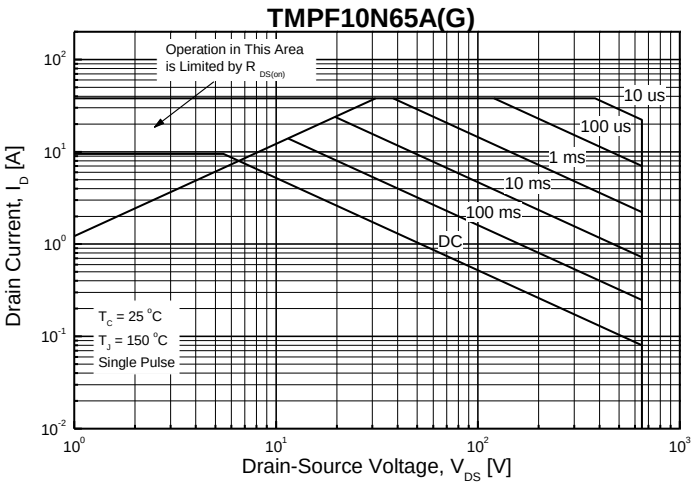

Drain-Source Breakdown Voltage
BVDSS, (Normalized)
VGS = 0 V
ID
Junction Temperature,TJ [°C]



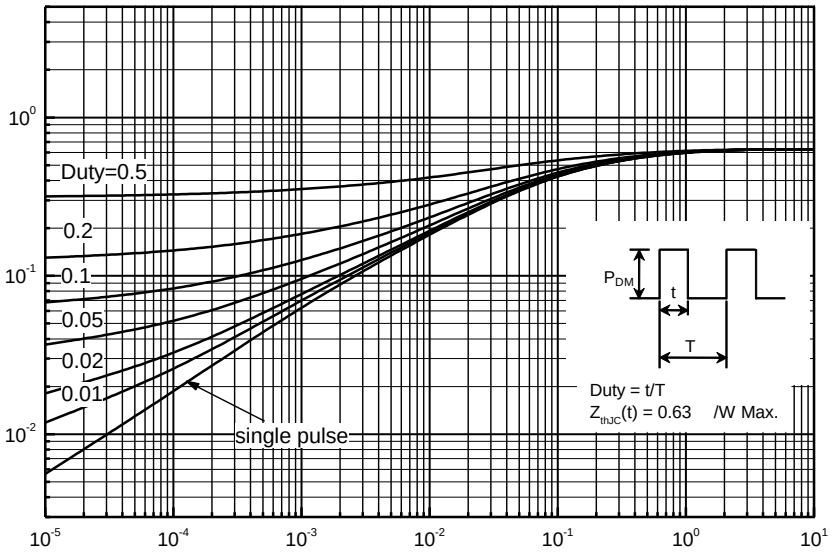

Drain Current, ID [A]
Case Temperature, TC [ ]


Gate Threshold Voltage
VTH, (Normalized)
VDS = VGS
ID = 250 μ A
Junction Temperature, TJ [°C]

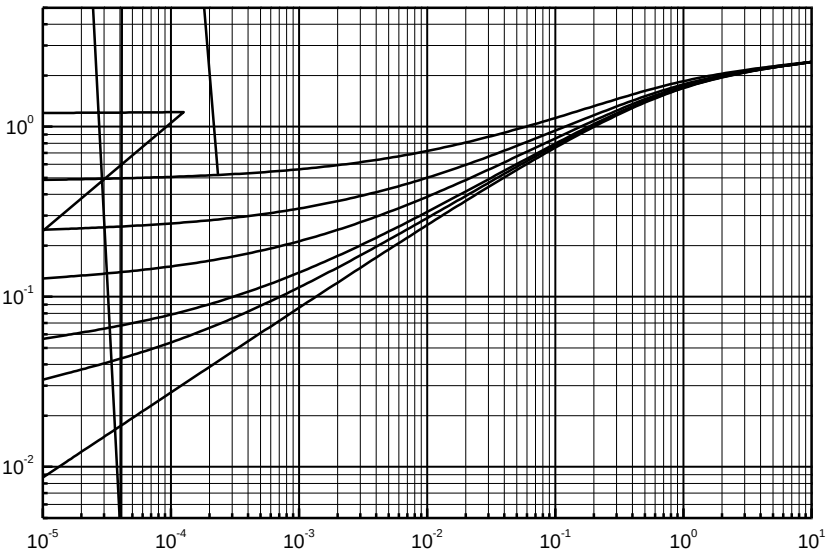

TMP10N65A(G)
Operation in This Area
is Limited by RDS(on)
10 us
100 us
1 ms
10 ms
100 ms
DC
TC = 25 °C
TJ = 150 °C
Single Pulse
Drain Current, ID [A]
Drain-Source Voltage, VDS [V]


TMPF10N65A(G)
Operation in This Area
is Limited by RDS(on)
10 us
100 us
1 ms
10 ms
100 ms
DC
TC = 25 °C
TJ = 150 °C
Single Pulse
Drain Current, ID [A]
Drain-Source Voltage, VDS [V]

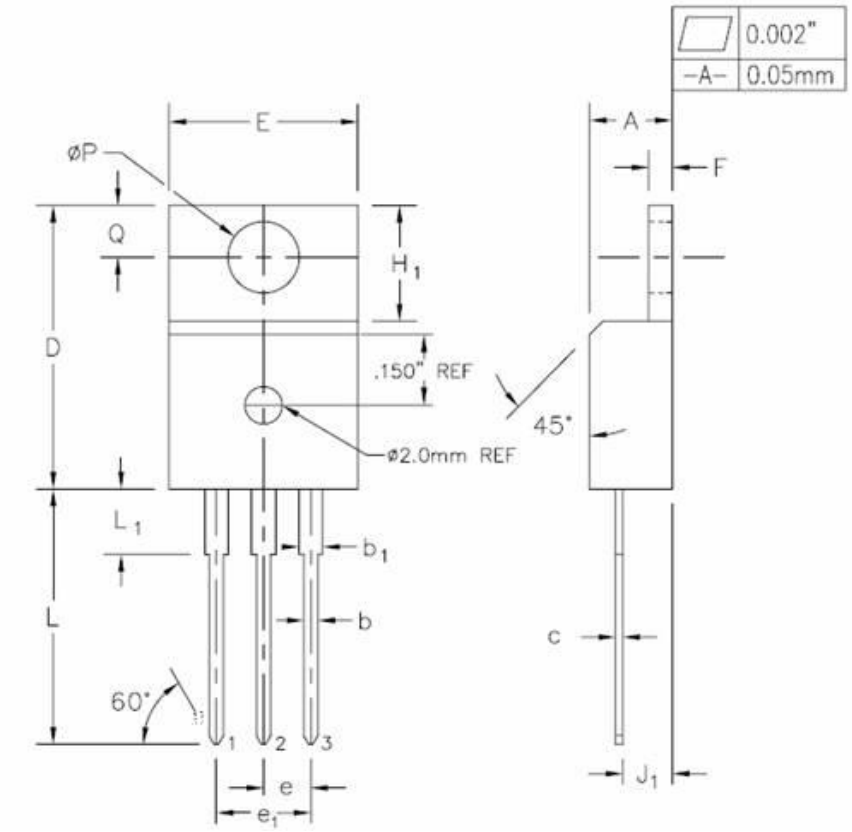
TMP10N65A(G)



TMPF10N65A(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	0.410	10.04	10.41	
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	
øP	0.148	0.153	3.79	3.88	2
Q	0.102	0.112	2.60	2.84	

TO-220F-3L MECHANICAL DATA