

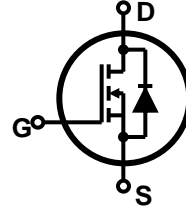
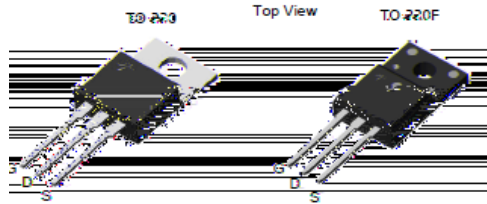
Features

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

$$V_{DSS} = 550 \text{ V} @ T_{jmax}$$

$$I_D = 13 \text{ A}$$

$$R_{DS(on)} = 0.48 \text{ (max) } @ V_{GS} = 10 \text{ V}$$



Device	Package	Marking	Remark
TMP13N50 / TMPF13N50	TO-220 / TO-220F	TMP13N50 / TMPF13N50	RoHS
TMP13N50G / TMPF13N50G	TO-220 / TO-220F	TMP13N50G / TMPF13N50G	Halogen Free

Absolute Maximum Ratings

Parameter	Symbol	TMP13N50(G)	TMPF13N50(G)	Unit	
Drain-Source Voltage	V_{DS}	500		V	
Gate-Source Voltage	V_{GS}	± 30		V	
Continuous Drain Current	I_D	$T_C = 25 \text{ }^\circ\text{C}$	13	13*	A
		$T_C = 100 \text{ }^\circ\text{C}$	8.2	8.2*	A
Pulsed Drain Current (Note 1)	I_{DM}	52	52*	A	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	563		mJ	
Repetitive Avalanche Current (Note 1)	I_{AR}	13		A	
Repetitive Avalanche Energy (Note 1)	E_{AR}	18.3		mJ	
Power Dissipation	P_D	$T_C = 25 \text{ }^\circ\text{C}$	183	52	W
		Derate above 25 $^\circ\text{C}$	1.46	0.41	W/ $^\circ\text{C}$
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		$^\circ\text{C}$	
Maximum lead temperature for soldering purposes,	T_L	300		$^\circ\text{C}$	

* Limited only by maximum junction temperature

Thermal Characteristics

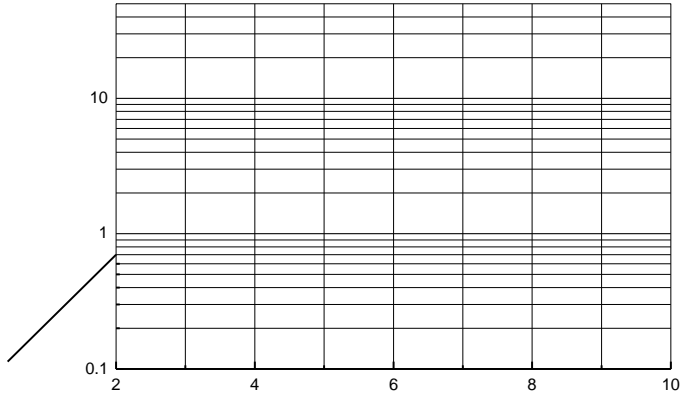
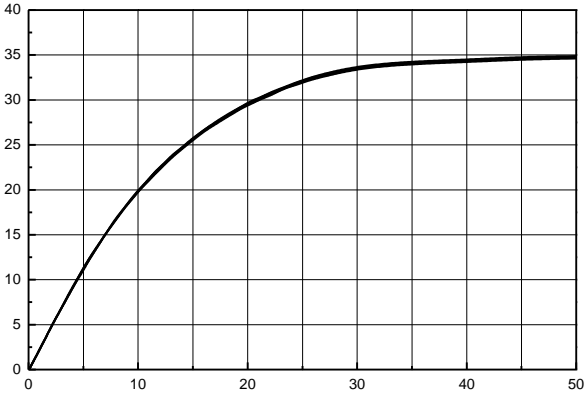
Parameter	Symbol	TMP13N50(G)	TMPF13N50(G)	Unit
Maximum Thermal resistance, Junction-to-Case	R_{JC}	0.63	2.4	$^\circ\text{C}/\text{W}$
Maximum Thermal resistance, Junction-to-Ambient	R_{JA}	62.5	62.5	$^\circ\text{C}/\text{W}$

Electrical Characteristics : $T_C=25^\circ\text{C}$, unless otherwise noted

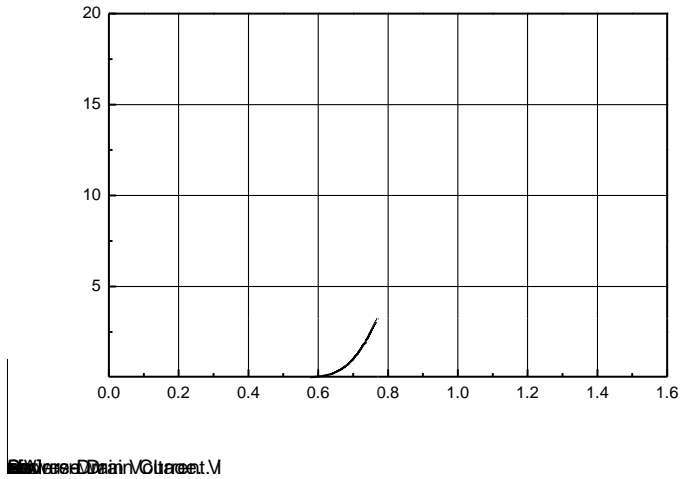
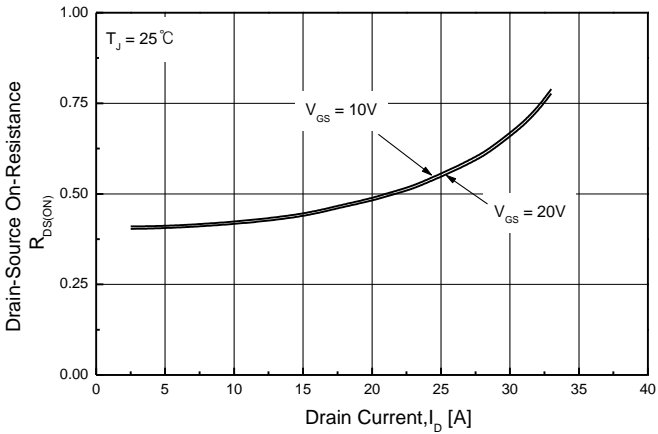
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	500	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
		$V_{DS} = 400\text{ V}, T_C = 125^\circ\text{C}$	--	--	10	μA
Forward Gate-Source Leakage Current	I_{GSSF}	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
Reverse Gate-Source Leakage Current	I_{GSSR}	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA

ON						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	2	--	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 6.5\text{ A}$	--	0.38	0.48	
Forward Transconductance (Note 4)	g_{FS}	$V_{DS} = 30\text{ V}, I_D = 6.5\text{ A}$	--	14	--	S

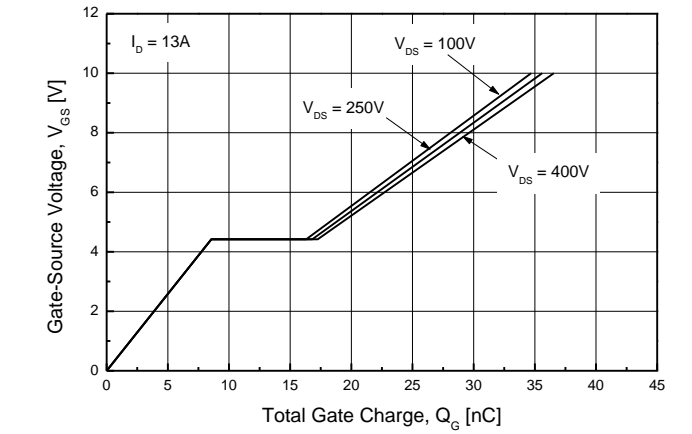
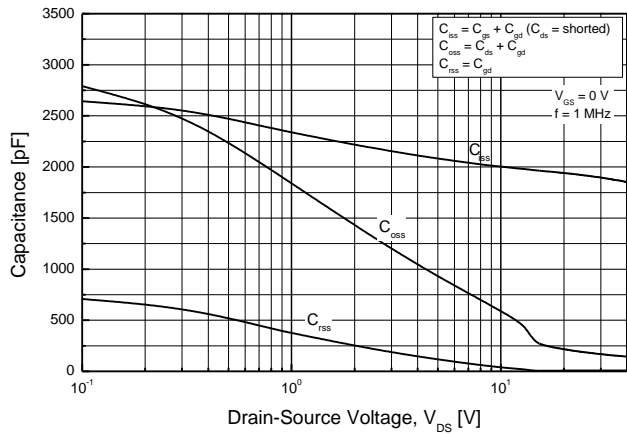
- Note :
1. Repeated rating : Pulse width limited by safe operating area
 2. $L=6\text{mH}, I_{AS} = 13\text{A}, V_{DD} = 50\text{V}, R_G = 25\ \Omega$, Starting $T_J = 25^\circ\text{C}$
 3. I_{SD} μs , V_{DD} μs , V_{DS} , Starting $T_J = 25^\circ\text{C}$
 4. μ
 5. Essentially Independent of Operating Temperature Typical Characteristics

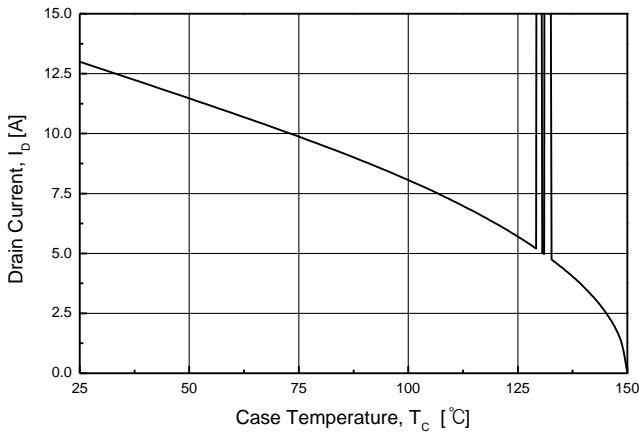
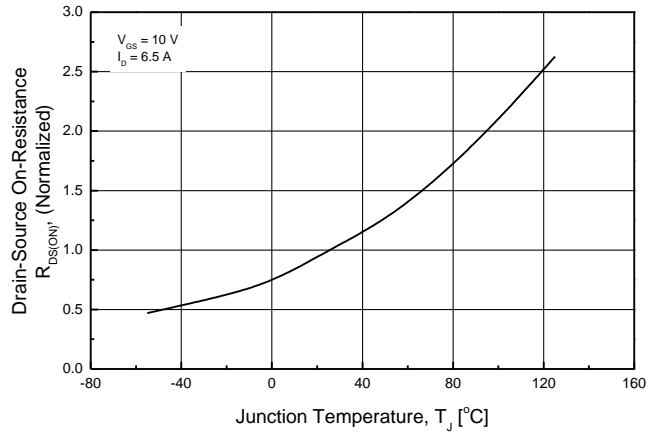
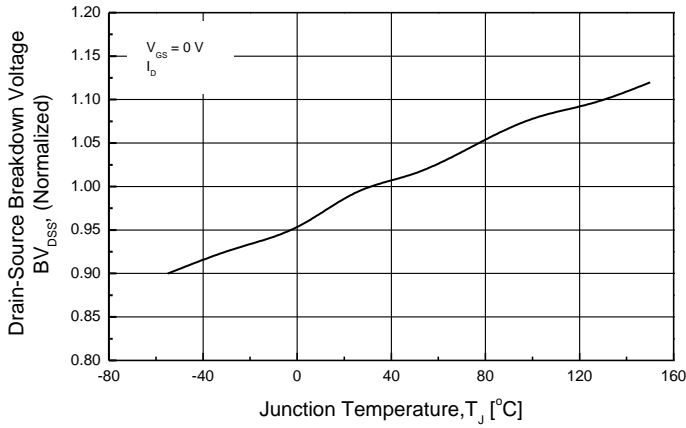


50W

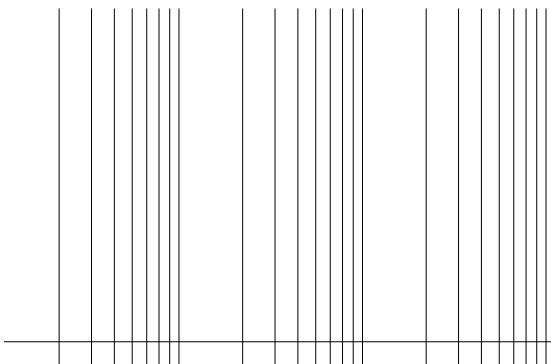


50W





TMP13N50(G)



TMPF13N50(G)

