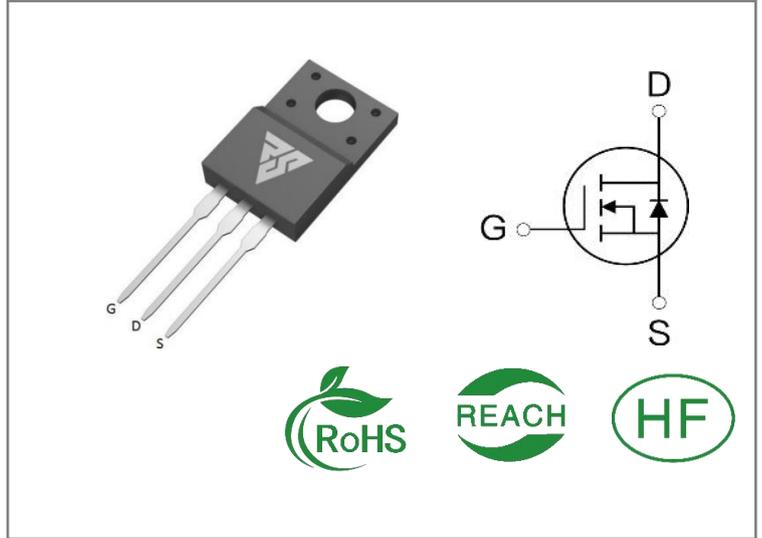


ID	$R_{DS(ON)}$ (Typ)	VDSS
5A	1.8Ω	650V


Applications:

- High efficiency swith
- Electronic lamp ballasts
- UPS

Features:

- Low Crss
- Low gate charge
- Fast switching
- Improved ESD capability
- Improved dv/dt capability
- 100% avalanche energy test

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS5N65F	T0-220F	RS5N65F	Tube	50 PCS

Absolute Maximun Ratings Tc= 25°C unless otherwise specified

Symbol	Parameter	RS5N65F	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current TC=25°C	5	A
	Continuous Drain Current TC=100°C	2.5	
IDM	Pulsed Drain Current (Note*1)	20	
PD	Power Dissipation	33	W
VGS	Gate- to- Source Voltage	±30	V
IAR	Avalanche Current	5	A
EAR	Repetitive Avalanche Energy	11	mJ
EAS	Single Pulse Avalanche Engergy L = 18mH, IAS=5A,VDD = 50V, RG = 25 Ω	244	mJ
Dv/dt	Peak Diode Recovery ISD≤5A, dv/dt≤300A/μs	4.5	V/ns
TL TPKG	Maximum Temperature for Soldering	300	°C
TJ, TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the " Absolute Maximum Ratings" Table may cause permanent damage to the device.

REV:H-B01-05-2025

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Thermal Resistance

Symbol	Parameter	RS5N65F	Units	Test Conditions
R θ JC	Junction-to-Case	3.79	$^{\circ}\text{C} / \text{W}$	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 $^{\circ}\text{C}$
R θ JA	Junction-to- Ambient	62.5		1 cubic foot chamber,free air.

OFF Characteristics T_J= 25 $^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	650	--	--	V	VGS=0V,ID=250 μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=650V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=30V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-30V VDS=0V

ON Characteristics T_J=25 $^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	1.8	2.4	Ω	VGS=10V ID=2.5A
VGS(TH)	Gate Threshold Voltage	2.0	--	4.0	V	VGS=VDS ID=250 μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	18	45	nS	VDS=325V ID=5A RG=25 Ω
trise	Rise Time	--	50	115		
td(OFF)	Turn- OFF Delay Time	--	51	112		
tfall	Fall Time	--	39	88		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	520	780	pF	VGS=0V VDS=25V f=1.0MHz
Coss	Output Capacitance	--	58	72		
Crss	Reverse Transfer Capacitance	--	5	13		
Qg	Total Gate Charge	--	16	21	nC	VDS=520V ID=5A VGS=10V
Qgs	Gate- to- Source Charge	--	3.0	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	7.2	--		

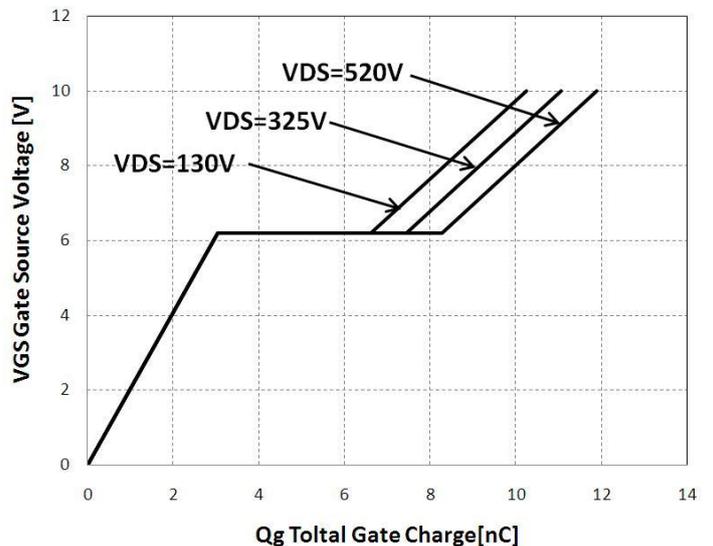
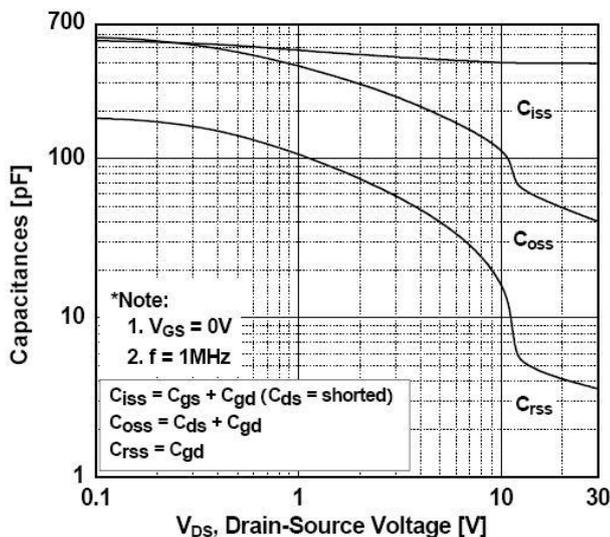
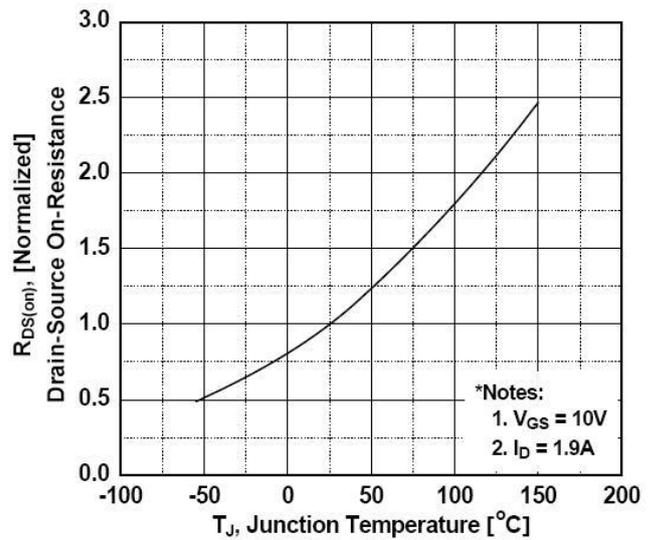
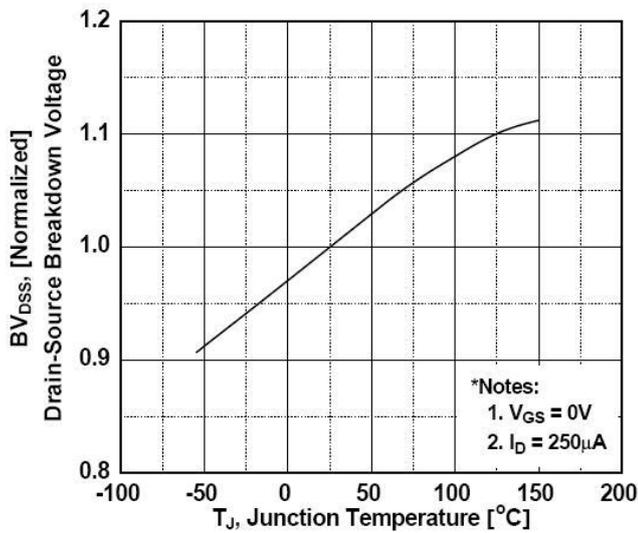
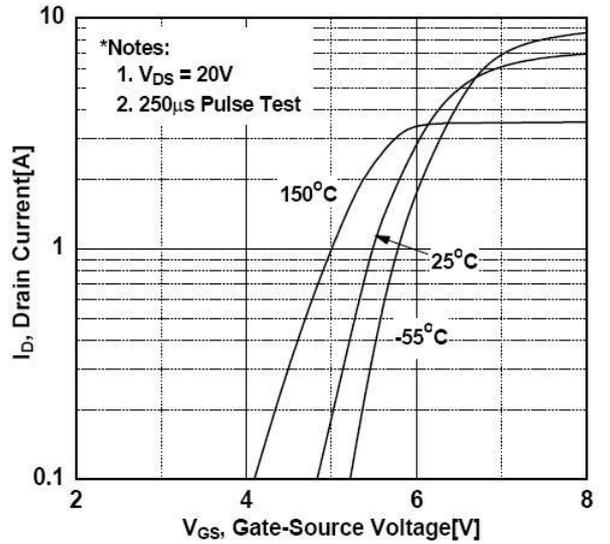
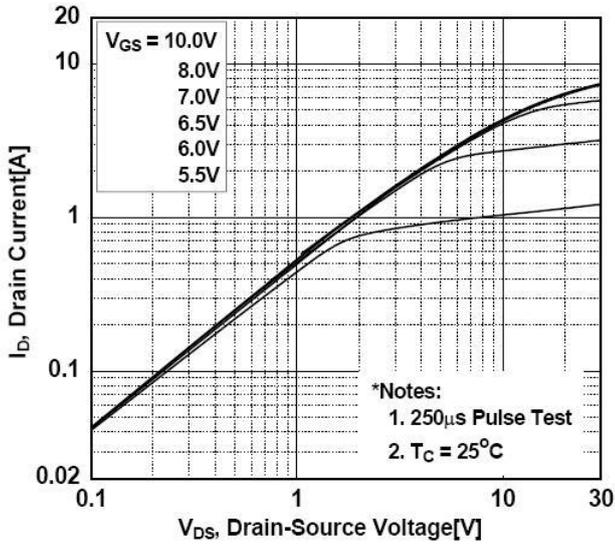
Source- Drain Diode Characteristics

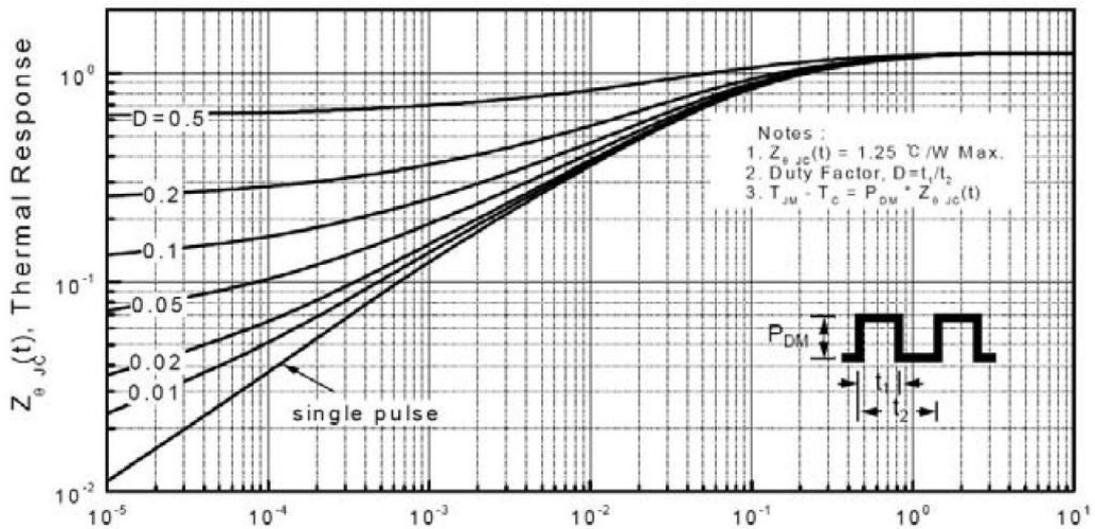
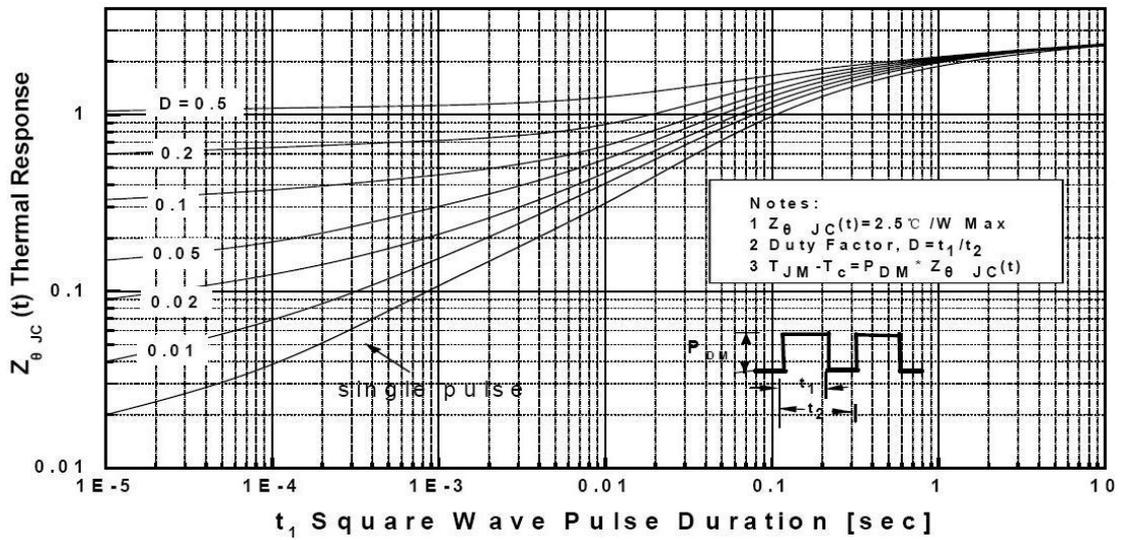
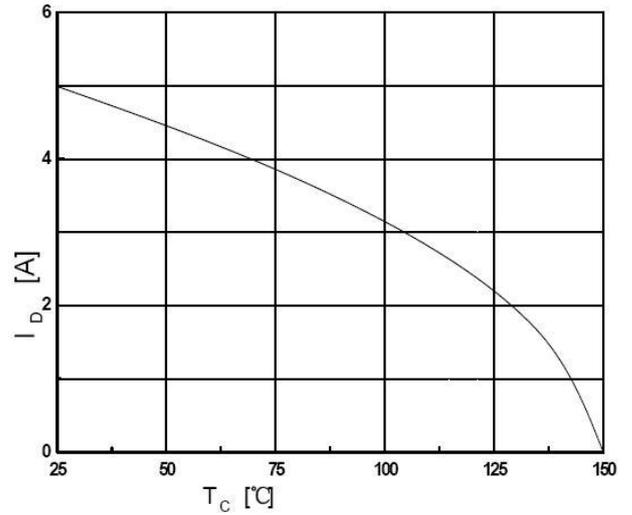
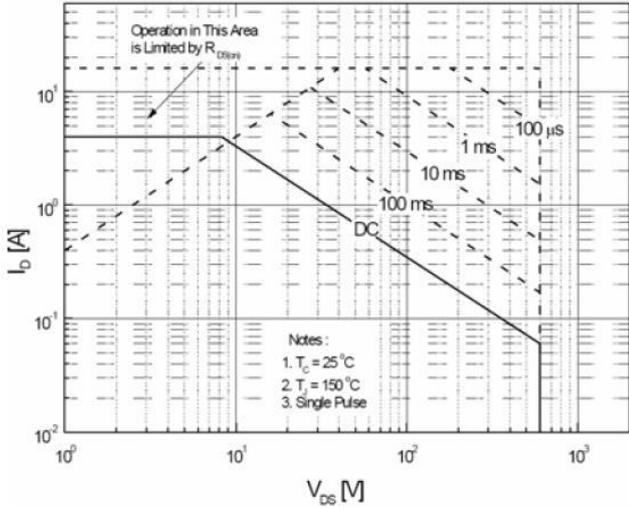
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	5	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	20	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=5A,VGS=0V
trr	Reverse Recovery Time	--	340	--	nS	VGS=0V IS=5A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	2.7	--	μC	

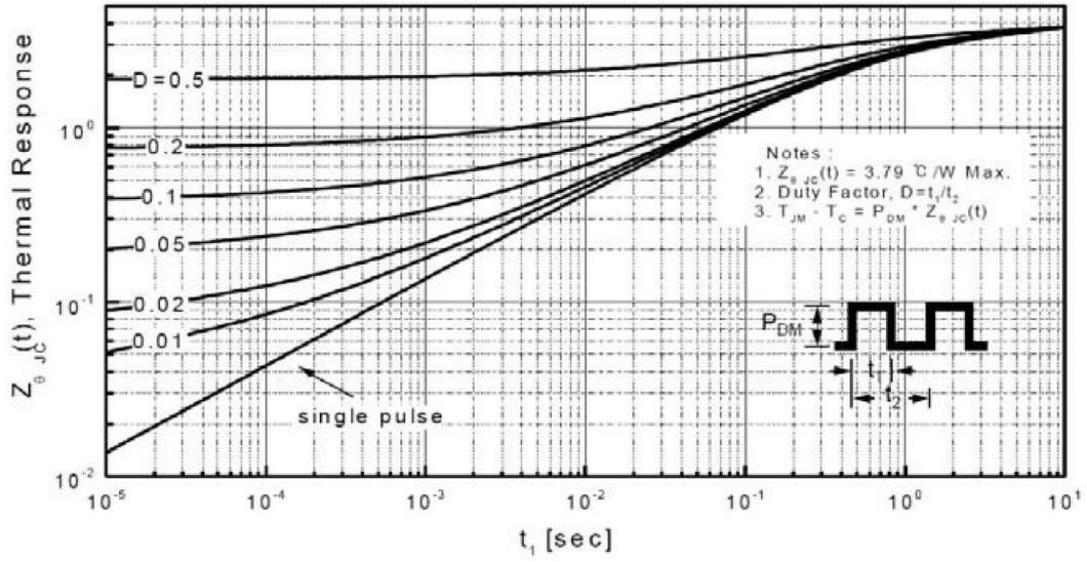
Notes:

- * 1. Repetitive rating, pulse width limited by maximum junction temperature.
- * 2. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

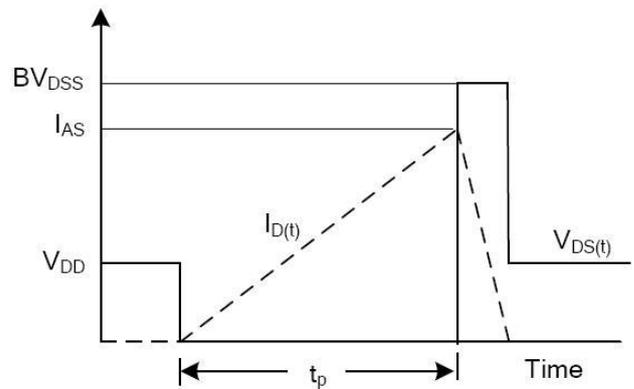
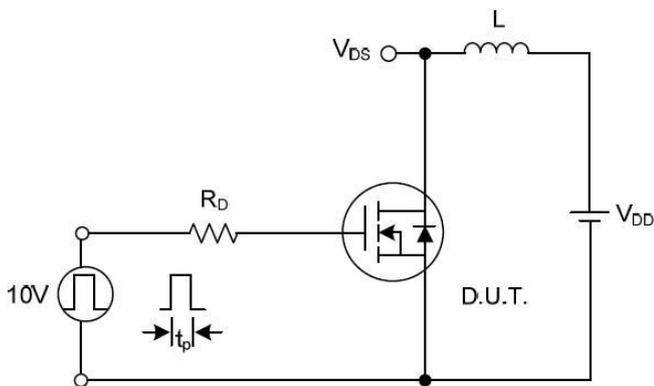
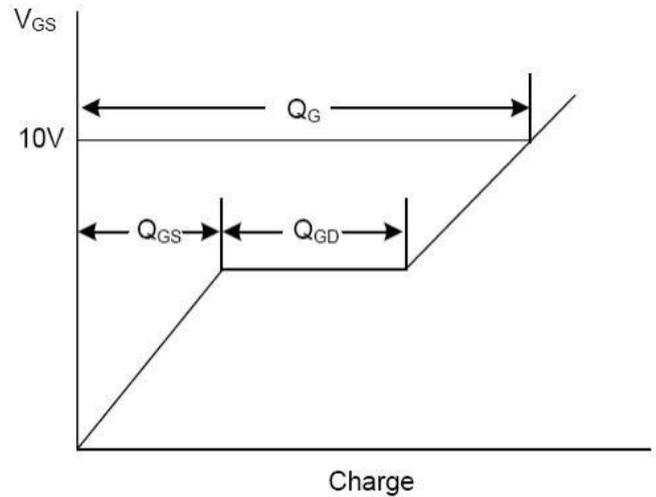
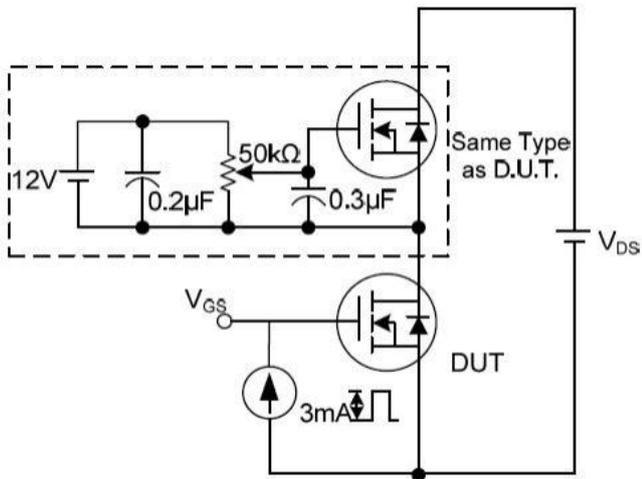
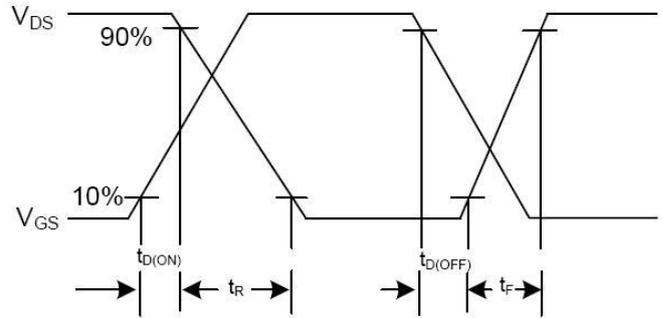
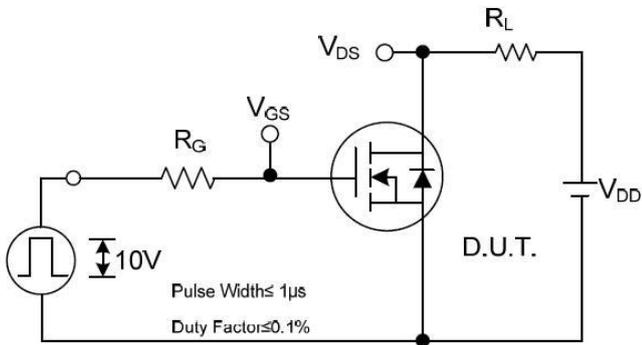
Typical Feature Curve



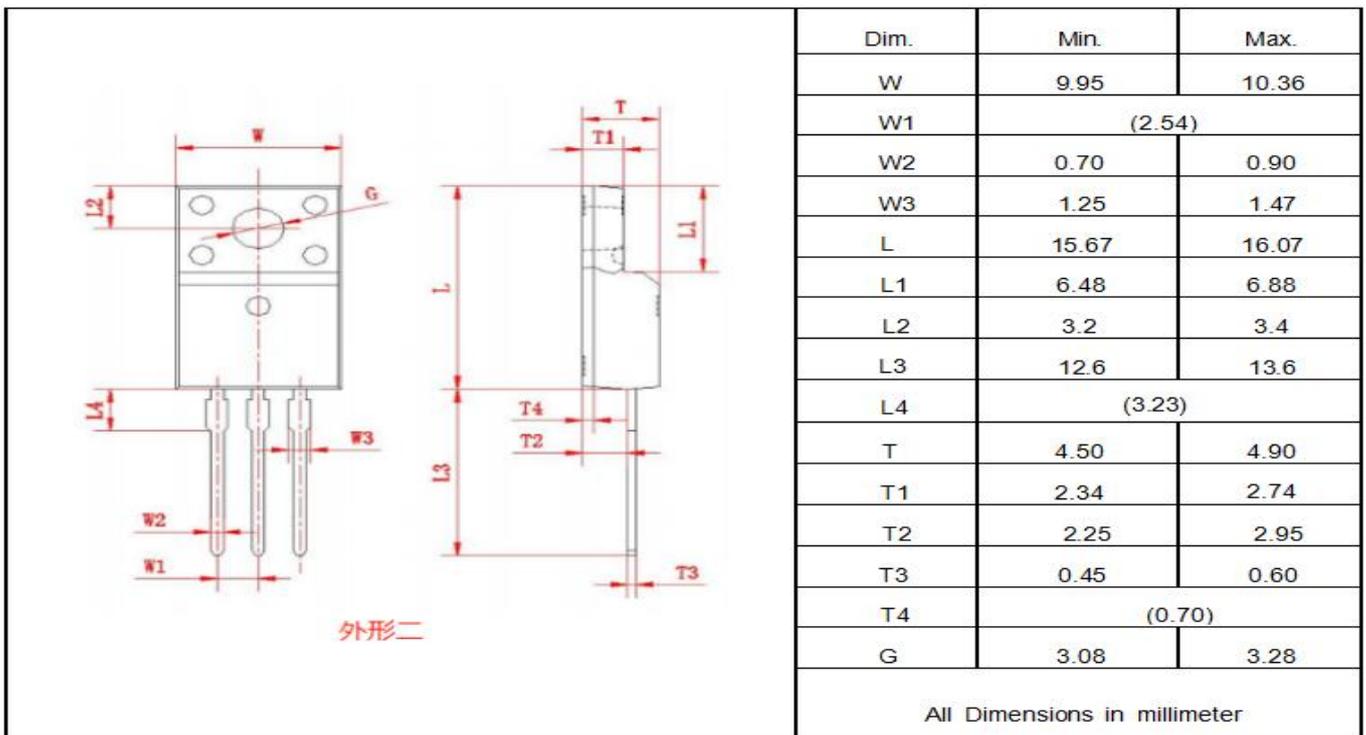
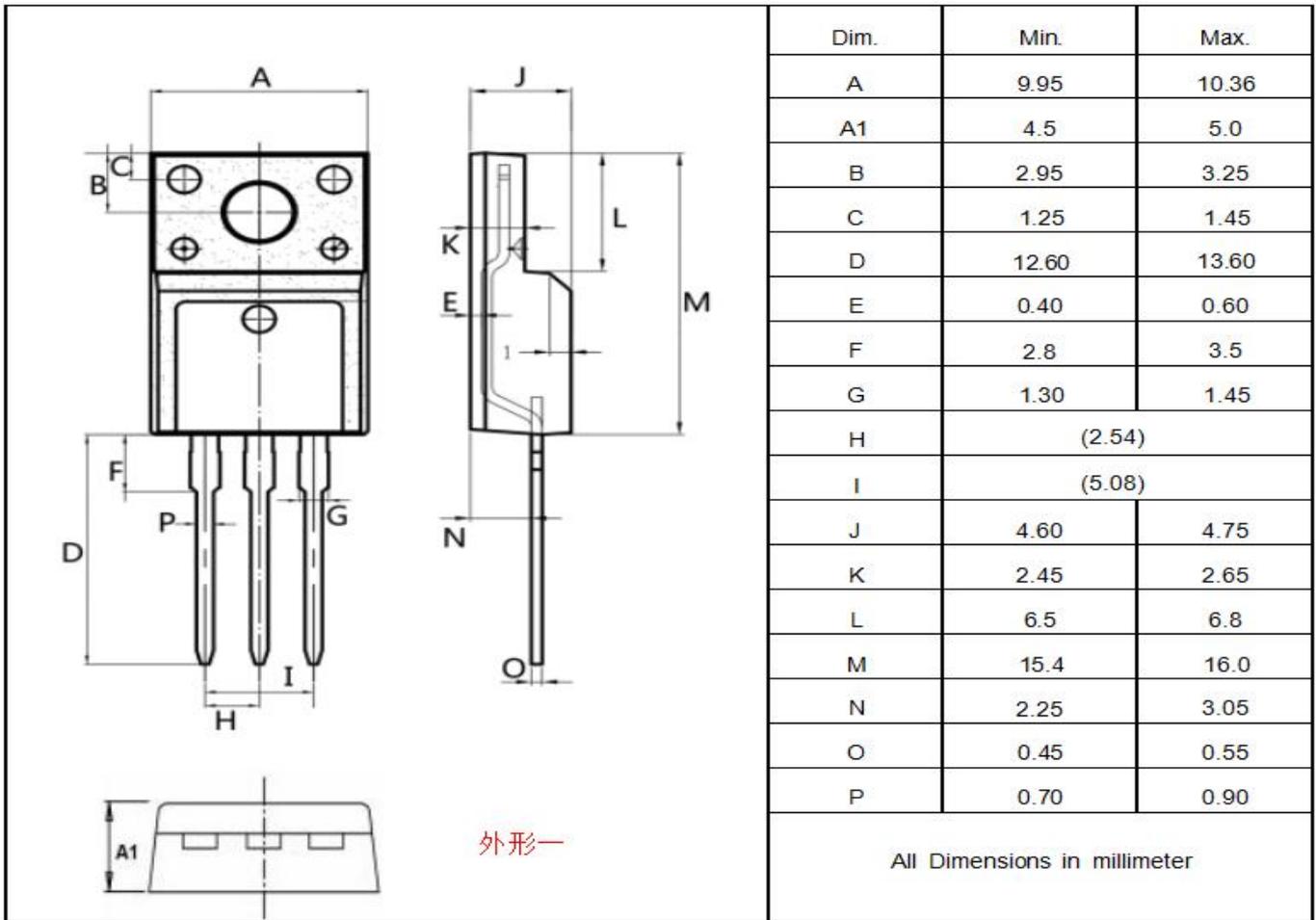




Test Circuits and Waveforms



Package outline drawing(TO-220F Unit: mm)



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