
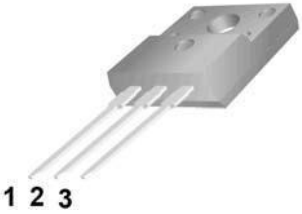
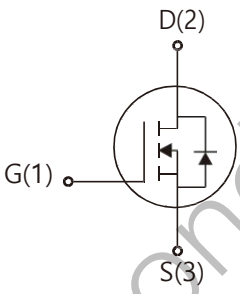


WGF70R490

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Q_G=8.7nC(Typ.).
- V_{DSS}=700 V, I_D=8A
- R_{DS(on)} : 0.55 Ω (Max) @V_G=10V

TO-220F 

- 1.Gate (G)
- 2.Drain (D)
- 3.Source (S)

Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	700	V
I _D	Drain Current	T _j =25°C	8.0
		T _j =100°C	5.0
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulse Average Energy (note1)	140	mJ
I _{DM}	Pulsed Drain Current (note2)	24	A
P _D	Power Dissipation (T _j =25°C)	26	W
T _j	Junction Temperature(Max)	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
dv/dt	MOSFET dv/dt ruggedness, V _{DS} =0V...480V	50	V/nS

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance Junction to Case	-	4.8	°C/W
R _{θJA}	Thermal Resistance Junction to Ambient	-	62.5	°C/W

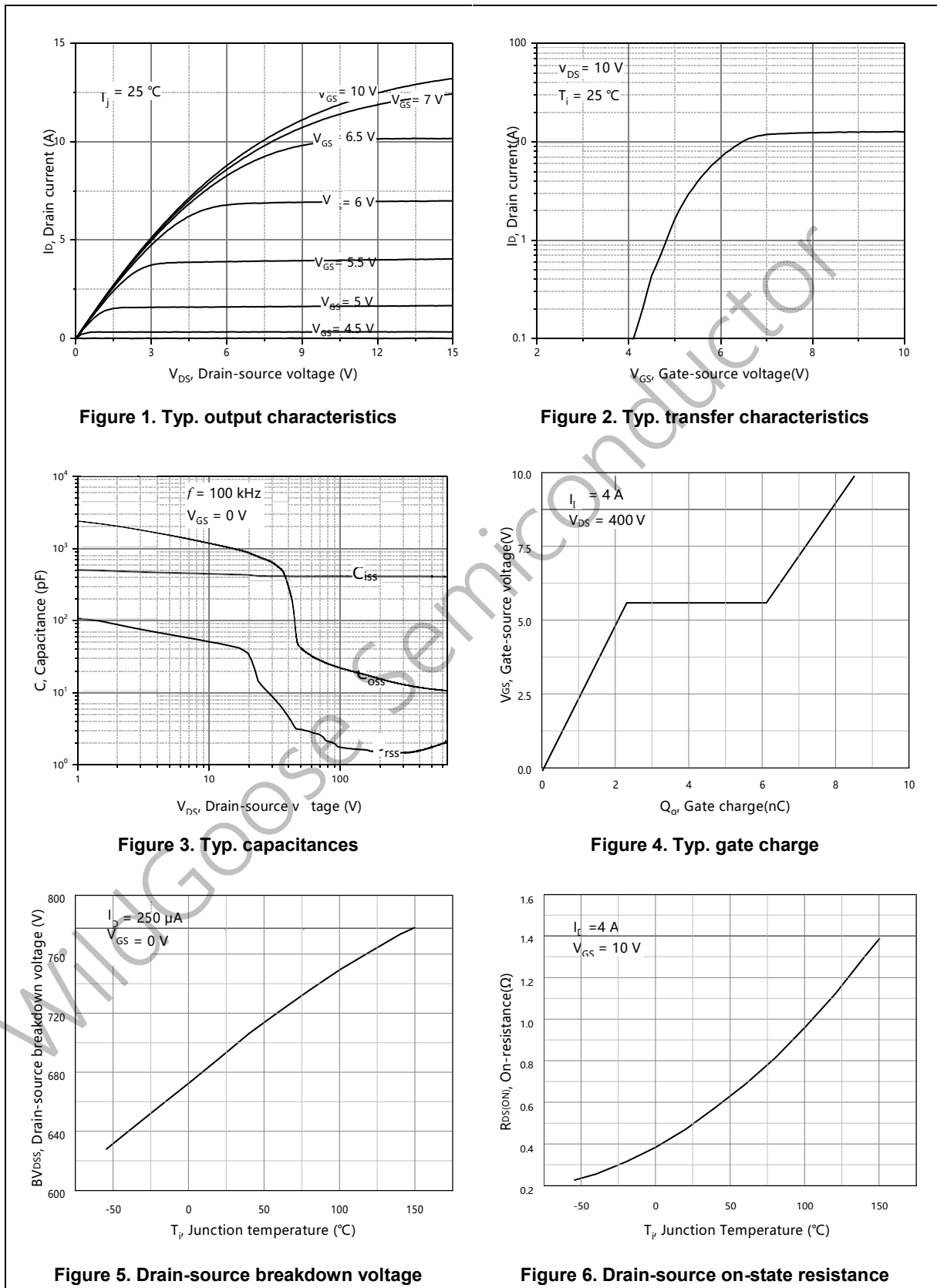
Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D=250\mu A, V_{GS}=0$	700	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	$I_D=250\mu A$, Reference to 25°C	-	0.67	-	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=700V, V_{GS}=0V$	-	-	10	μA
		$V_{DS}=520V, T_J=125^\circ C$	-	-	100	
I_{GSSF}	Gate-body leakage Current, Forward	$V_{GS}=+30V, V_{DS}=0V$	-	-	100	nA
I_{GSSR}	Gate-body leakage Current, Reverse	$V_{GS}=-30V, V_{DS}=0V$	-	-	-100	
On Characteristics						
$V_{GS(TH)}$	Gate Threshold Voltage	$I_D=250\mu A, V_S=V_{GS}$	2	-	4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$I_D=4.0A, V_{GS}=10V$	-	0.49	0.55	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$	-	410.8	-	μF
C_{oss}	Output Capacitance		-	41.7	-	
C_{rss}	Reverse Transfer Capacitance		-	3.1	-	
Switching Characteristics						
$T_d(on)$	Turn-On Delay Time	$V_{DD}=400V, I_D=4A, R_G=25\Omega$ (Note 3,4)	-	26.4	-	nS
T_r	Turn-on Rise Time		-	17.9	-	
$T_d(off)$	Turn-Off Delay Time		-	56.2	-	
T_f	Turn-Off Rise Time		-	14.0	-	
Q_g	Total Gate Charge	$V_{DS}=400V, V_{GS}=10V, I_D=5A$ (Note3,4)	-	8.6	-	nC
Q_{gs}	Gate-Source Charge		-	2.2	-	
Q_{gd}	Gate-Drain Charge		-	3.8	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Max. Diode Forward Current	-	-	-	8	A
I_{SM}	Max. Pulsed Forward Current	-	-	-	24	
V_{SD}	Diode Forward Voltage	$I_D=8A$	-	-	1.3	V
T_{rr}	Reverse Recovery Time	$I_S=4A, V_{GS}=0V, diF/dt=100A/\mu s$ (Note3)	-	214.3	-	nS
Q_{rr}	Reverse Recovery Charge		-	1.7	-	μC

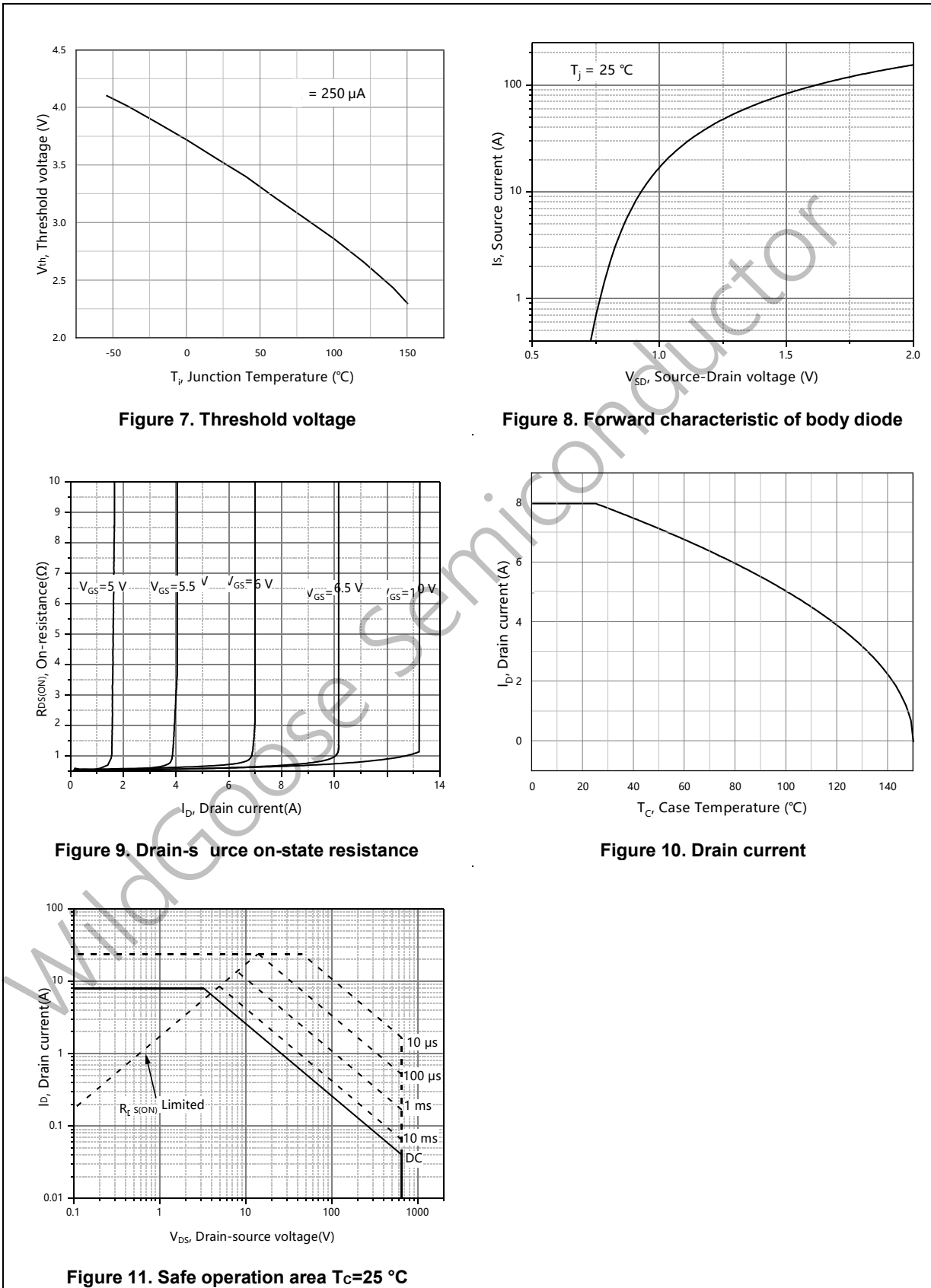
Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25^\circ C$.
- 5) $V_{DD}=100V, V_{GS}=10V, L=79.9mH$, starting $T_J=25^\circ C$.

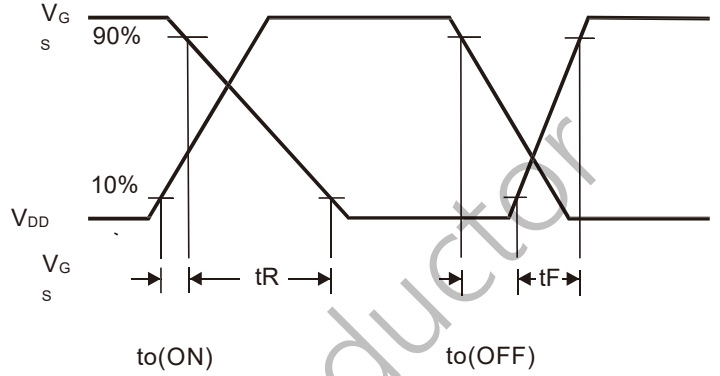
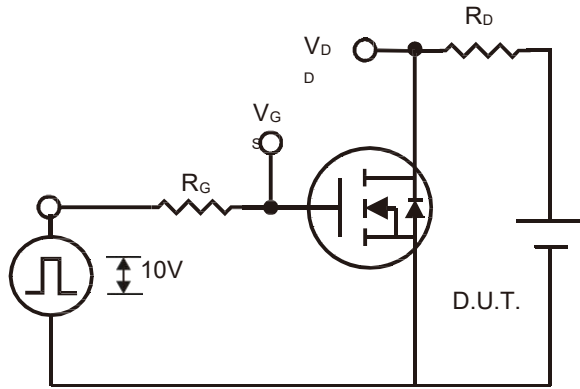
Typical Characteristics



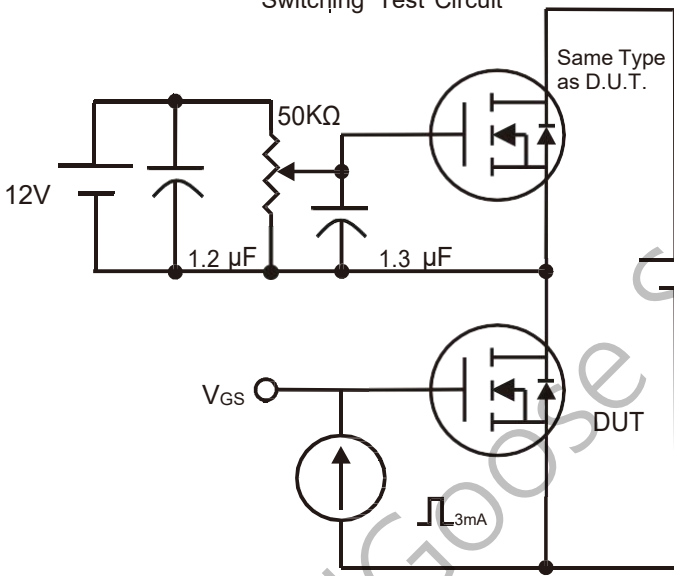
Typical Characteristics (Continued)



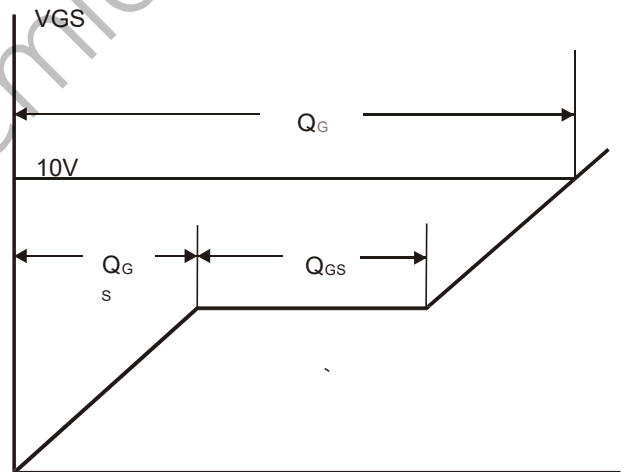
Gate Charge Test Circuit & Waveform



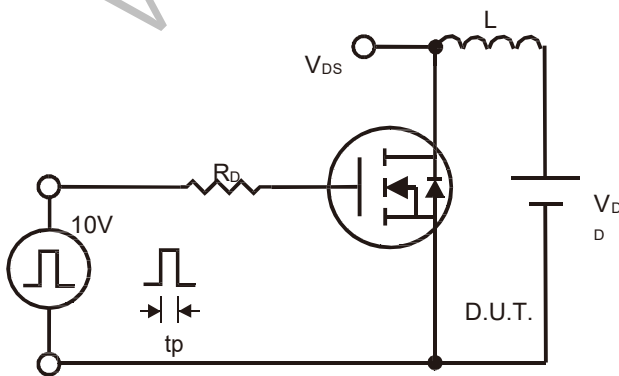
Switching Test Circuit



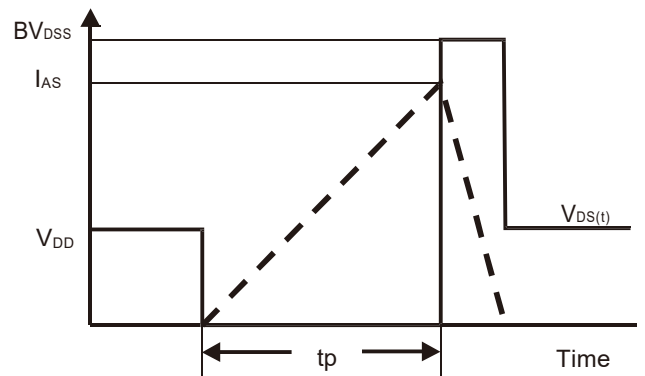
Switching Waveforms



Gate Charge Test Circuit



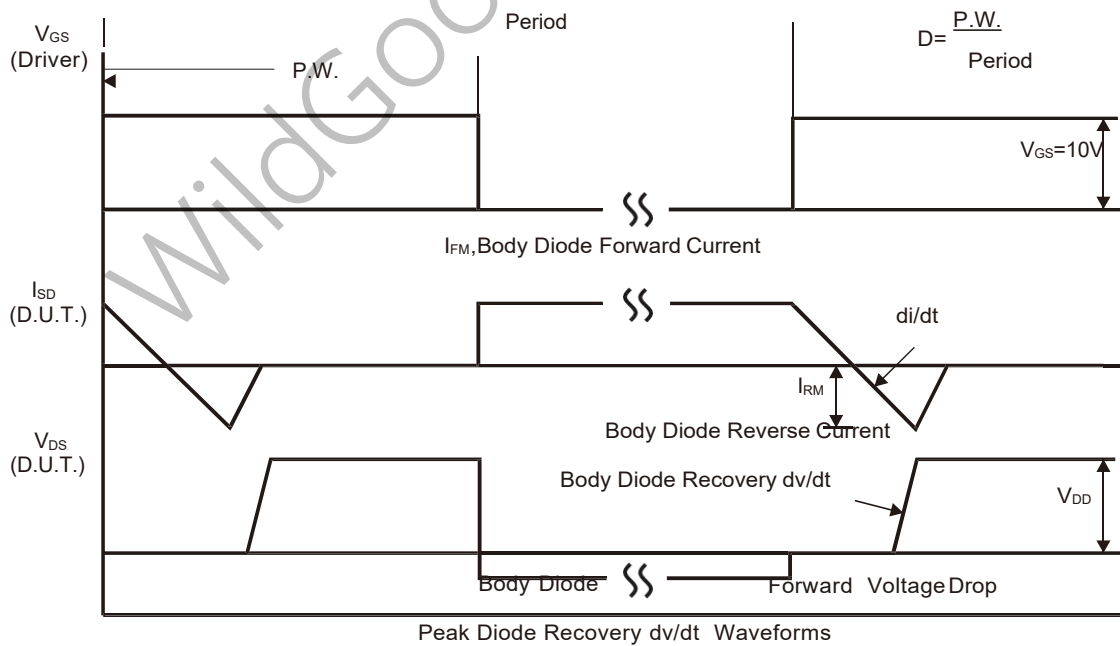
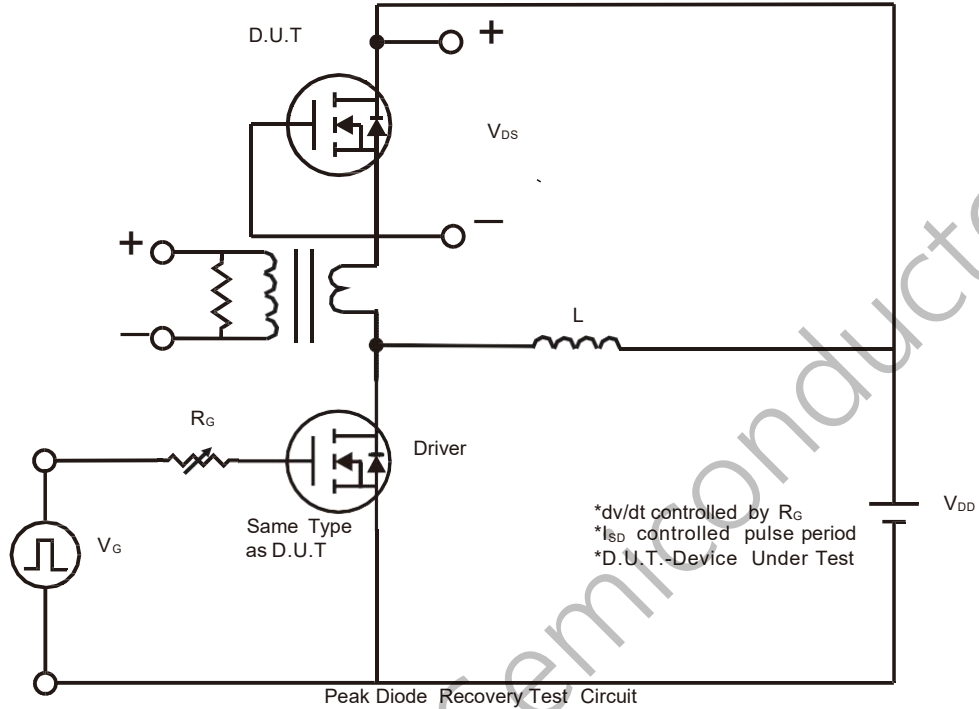
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

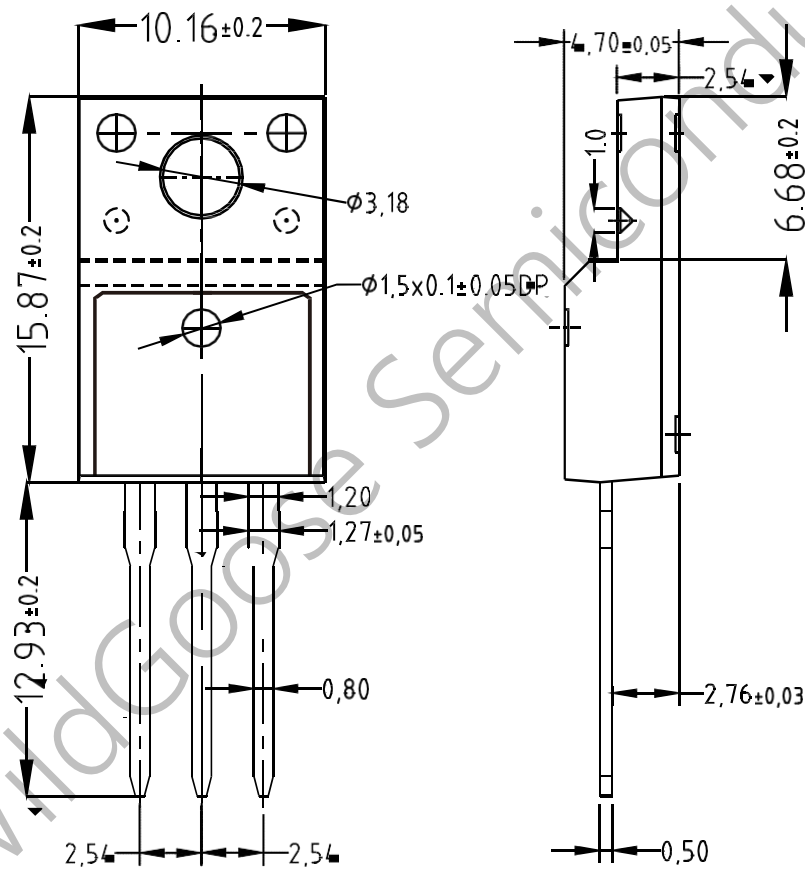
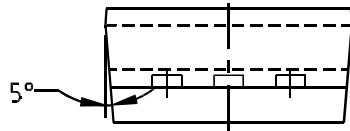
Peak Diode Recovery dv/dt Test Circuit & Waveform



Package Dimension

TO-220F

Unit: mm



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