

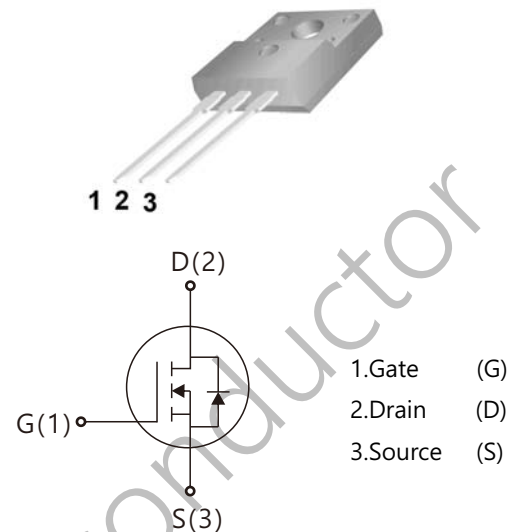


WGF10N65SE

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge : $Q_g=35\text{nC}$ (Typ.).
- $BV_{DSS}=650\text{ V}$, $I_D=10\text{ A}$
- $R_{DS(on)} : 0.9\ \Omega$ (Max) @ $V_G=10\text{ V}$
- 100% Avalanche Tested

TO-220F



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

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current	$T_j=25^\circ\text{C}$	10
		$T_j=100^\circ\text{C}$	6.7
V_{GSS}	Gate-Source Voltage	30	V
E_{AS}	Single Pulse Avalanche Energy (note1)	380	mJ
I_{AR}	Avalanche Current (note2)	10	A
P_D	Power Dissipation ($T_j=25^\circ\text{C}$)	65	W
T_j	Junction Temperature(Max)	150	°C
T_{stg}	Storage Temperature	-55~+150	°C
TL	Maximum lead temperature for soldering purpose, 1/8' from case for 5 seconds	300	°C

Thermal Characteristics

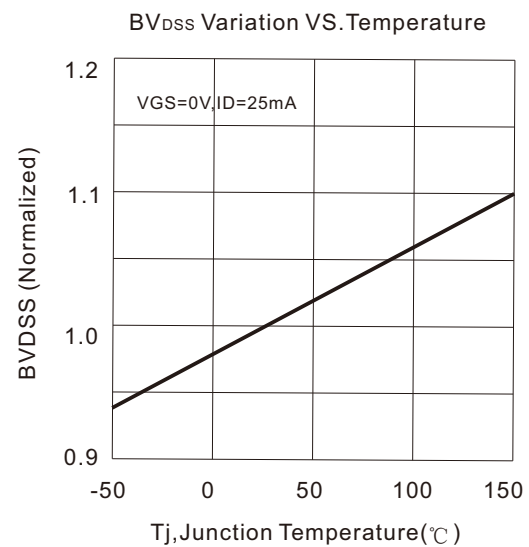
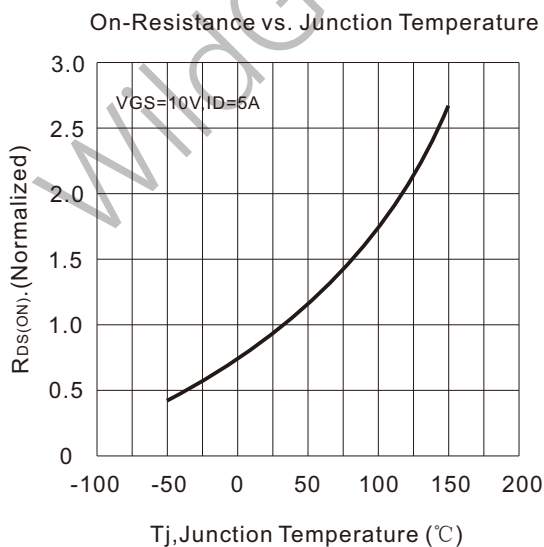
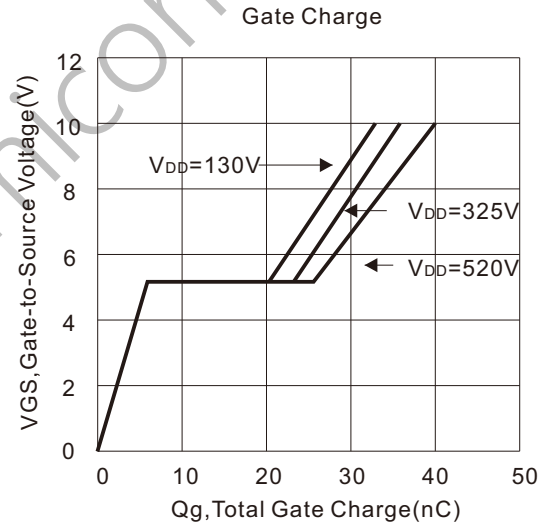
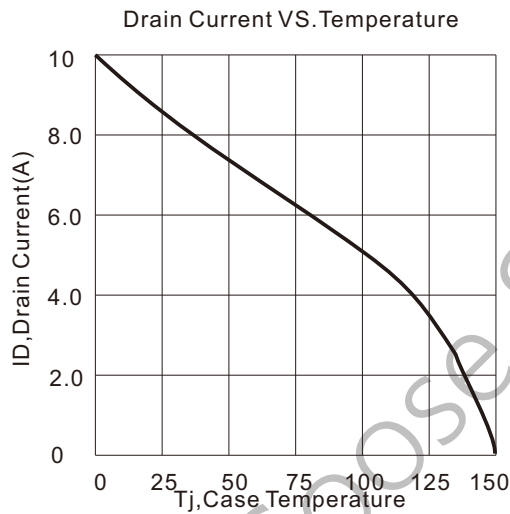
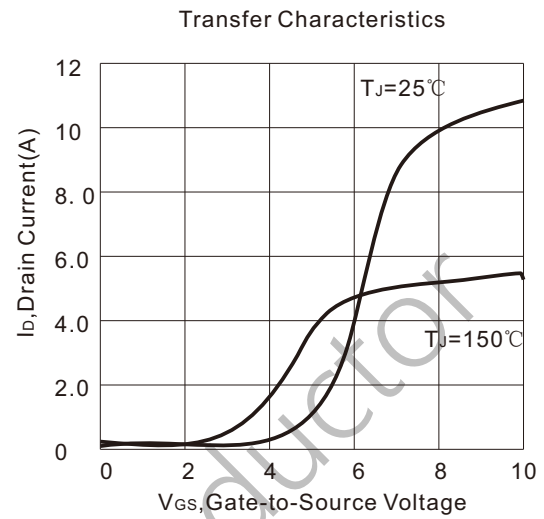
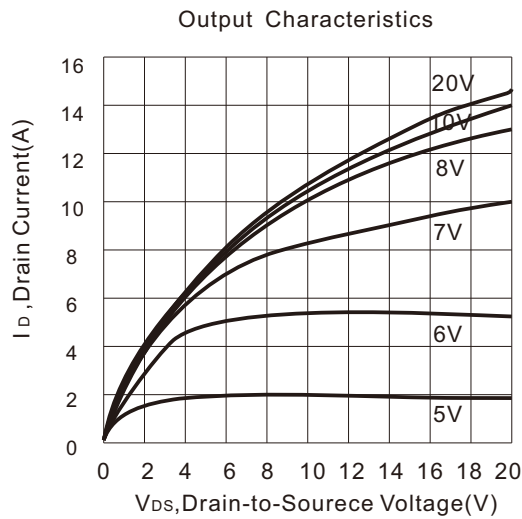
Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	-	2.4	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	-	62.5	°C/W

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

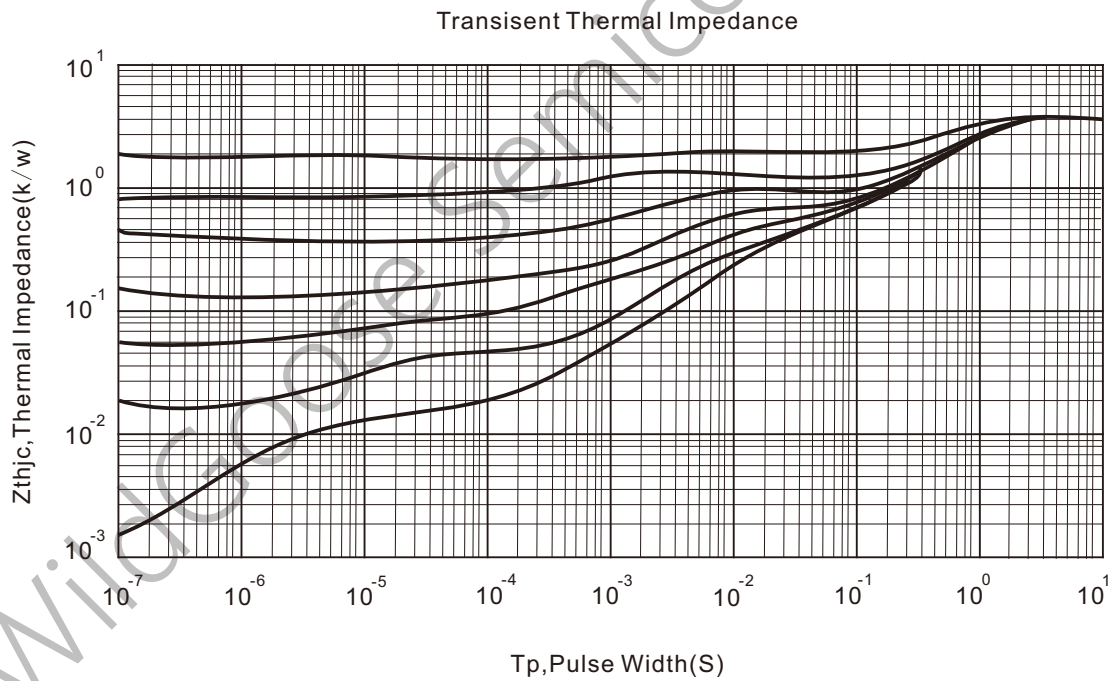
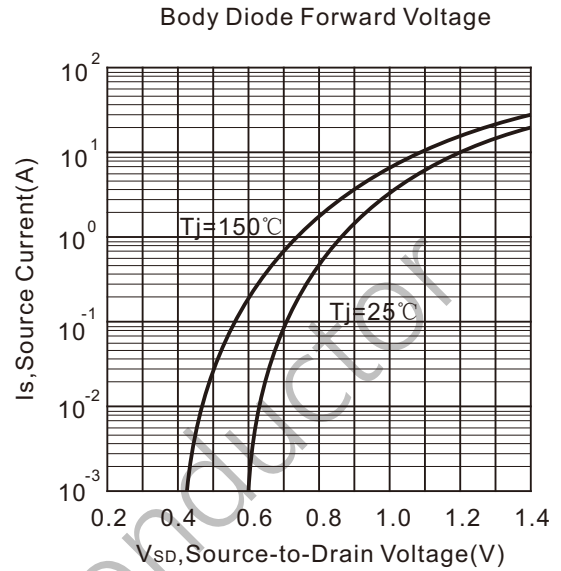
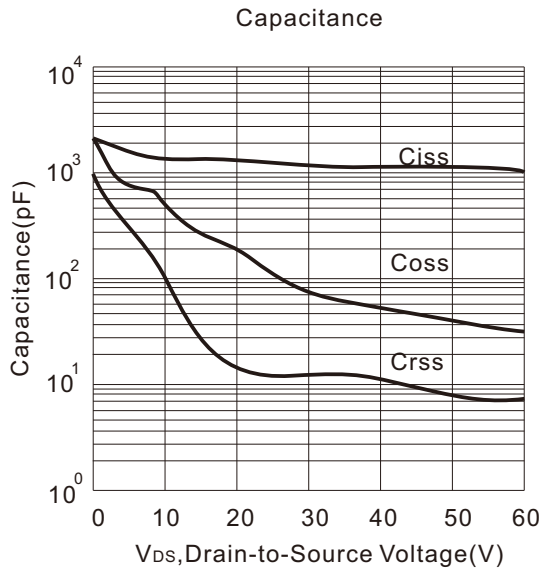
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA , V _{GS} =0	650	-	-	V
ΔBV _{DSS} /ΔTJ	Breakdown Voltage Temperature Coefficient	I _D =250μA , Reference to 25°C	-	0.67	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V	-	-	10	μA
		V _{DS} =520V, Tj=125°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 =250μA, V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =5.0A, V _{GS} =10V	-	0.8	0.9	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	V _{DS} =25V , V _{GS} =0 , f=1.0MHz	-	1500	-	pF
Coss	Output Capacitance		-	194	-	
Crss	Reverse Transfer Capacitance		-	18	-	
Switching Characteristics						
Td(on)	Turn-On Delay Time	V _{DD} =325V , I _D =10A R _G =25Ω (Note 3,4)	-	23	-	nS
Tr	Turn-On Rise Time		-	15	-	
Td(off)	Turn-Off Delay Time		-	90	-	
Tf	Turn-Off Rise Time		-	30	-	
Qg	Total Gate Charge	V _{DS} =520V, V _{GS} =10V , I _D =10A (Note3,4)	-	35	-	nC
Qgs	Gate-Source Charge		-	7	-	
Qgd	Gate-Drain Charge		-	18	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Max. Diode Forward Current	-	-	-	10	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	40	
V _{SD}	Diode Forward Voltage	I _D =10A	-	-	1.4	V
Trr	Reverse Recovery Time	I _S =10A, V _{GS} =0V diF/dt=100A/μs (Note3)	-	320	-	nS
Qrr	Reverse Recovery Charge		-	4.2	-	μC

- Notes : 1, L=0.5mH, IAS= 10A, VDD=50V, RG=25Ω , Starting TJ =25°C
 2, Repetitive Rating : Pulse width limited by maximum junction temperature
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 4, Essentially Independent of Operating Temperature

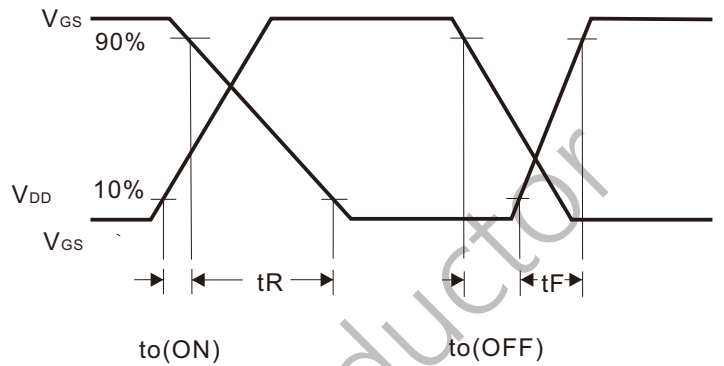
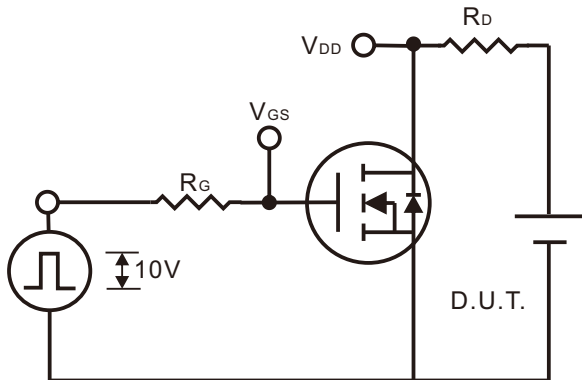
Typical Characteristics



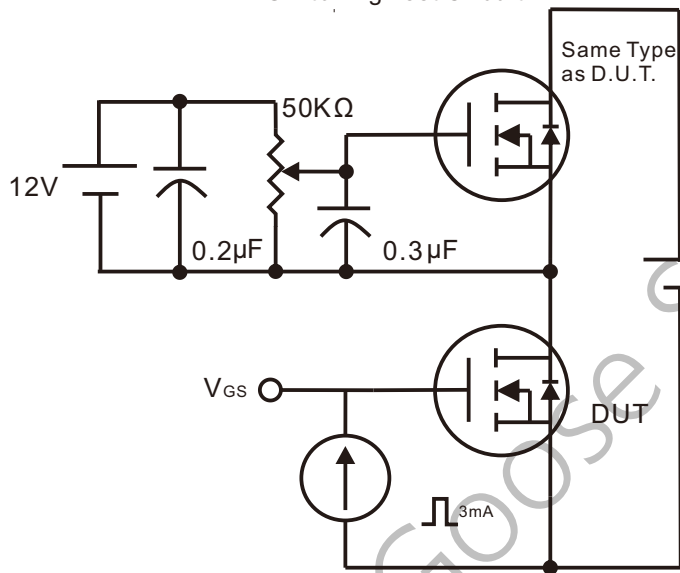
Typical Characteristics (Continued)



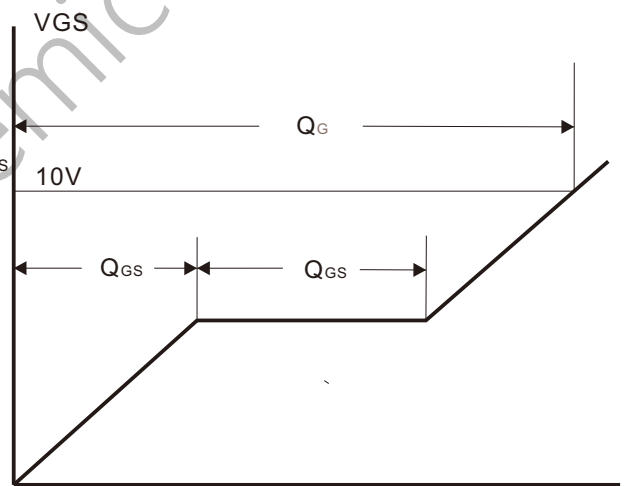
Gate Charge Test Circuit & Waveform



Switching Test Circuit

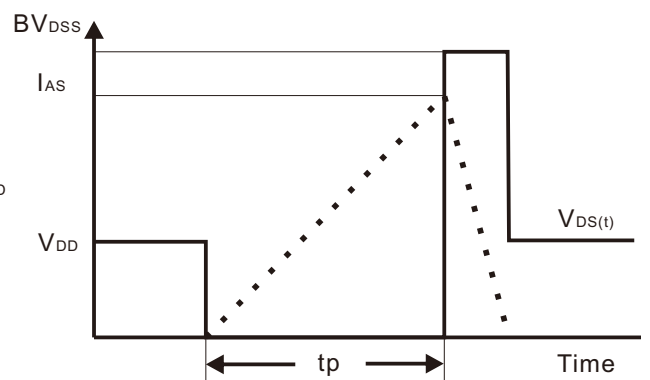
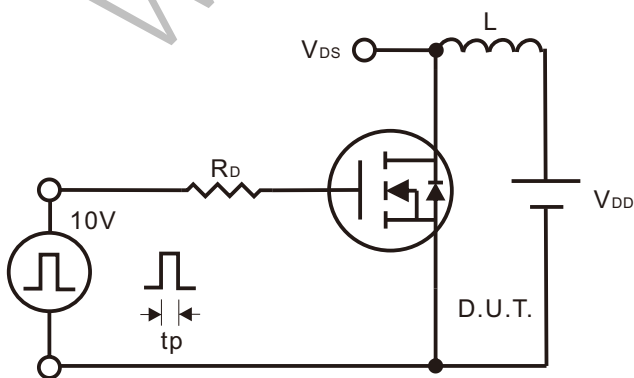


Switching Waveforms



Gate Charge Test Circuit

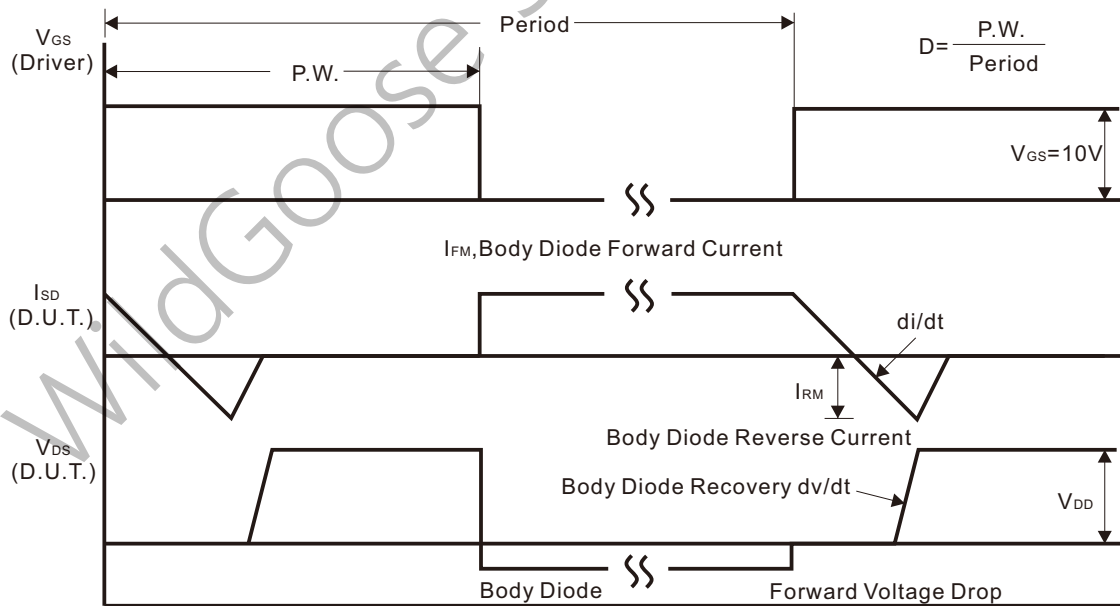
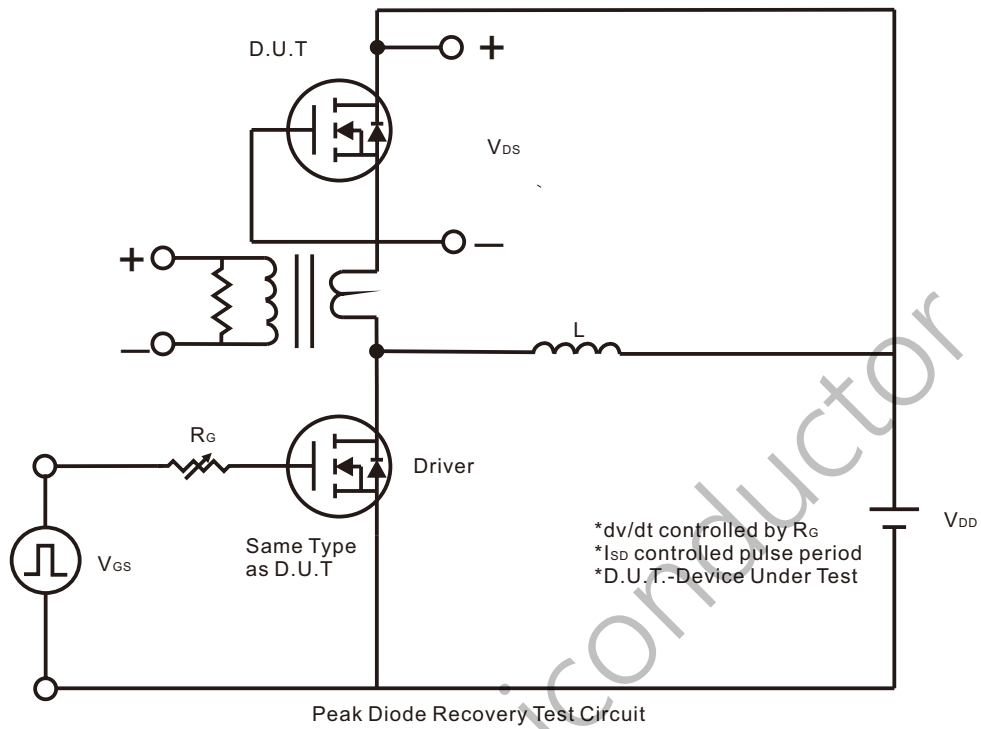
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

Peak Diode Recovery dv/dt Test Circuit & Waveform



Package Dimension

TO-220F

Unit: mm

