

Features

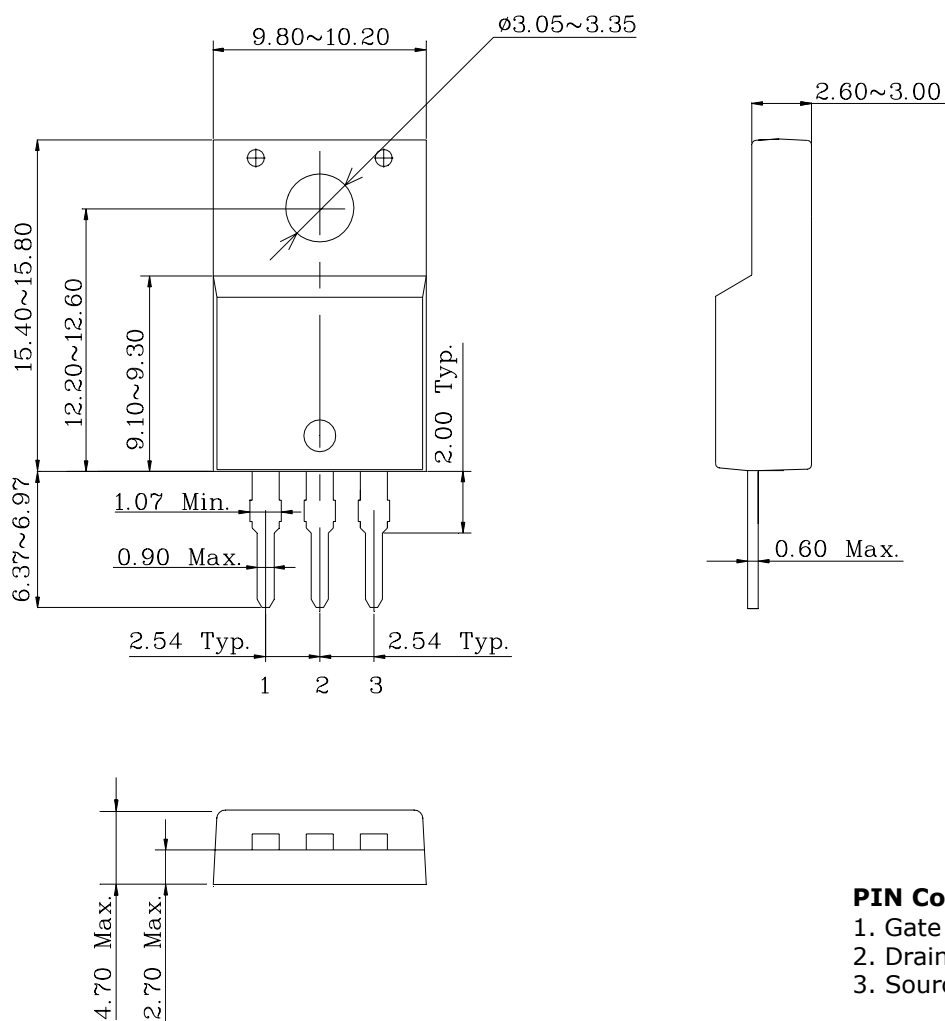
- Low Crss
- Low gate charge.
- Low leakage current

Ordering Information

Type NO.	Marking	Package Code
STK0765FC	STK0765	TO-220F-3SL

Outline Dimensions

unit : mm



PIN Connections

1. Gate
2. Drain
3. Source

Absolute maximum ratings

(T_C=25℃)

Characteristic	Symbol	Rating		Unit
Drain-source voltage	V _{DSS}	650		V
Gate-source voltage	V _{GSS}	±30		V
Drain current (DC) *	I _D	T _C =25℃	7	A
		T _C =100℃	4.4	A
Drain current (Pulsed) *	I _{DP}	28		A
Drain power dissipation (T _C =25℃)	P _D	40		W
Single pulsed avalanche energy ②	E _{AS}	420		mJ
Avalanche current (Repetitive) ①	I _{AR}	5.2		A
Repetitive avalanche energy ①	E _{AR}	14.7		mJ
Peak diode recovery dv/dt ③	dv/dt	5.5		V/ns
Junction temperature	T _J	150		℃
Storage temperature range	T _{stg}	-55~150		℃

* Limited by maximum junction temperature

Thermal Resistance

Characteristic	Symbol	Typ.	Max	Units
Thermal resistance junction-case	R _{th(J-C)}	-	3.125	℃/W
Thermal resistance Junction-ambient	R _{th(J-A)}	-	62.5	

Electrical Characteristics

(T_c=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =250 μA, V _{GS} =0	650	-	-	V
Gate threshold voltage	V _{GS(th)}	I _D =250 μA, V _{DS} =V _{GS}	2.0	-	4.0	V
Drain-source cut-off current	I _{DSS}	V _{DS} =650V, V _{GS} =0	-	-	10	μA
Gate leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V	-	-	±100	nA
Static drain-source on-resistance ④	R _{DS(on)}	V _{GS} =10V, I _D =3.5A	-	-	1.2	Ω
Forward transfer conductance ④	g _{fs}	V _{DS} =5V, I _D =3.5A	3.9	6.4	-	S
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V f=1 MHz	-	881	-	pF
Output capacitance	C _{oss}		-	123	-	
Reverse transfer capacitance	C _{rss}		-	19	-	
Turn-on delay time	t _{d(on)}	V _{DD} =325V, I _D =7A R _G =25Ω Fig. 13 ④⑤	-	18	-	ns
Rise time	t _r		-	19	-	
Turn-off delay time	t _{d(off)}		-	72	-	
Fall time	t _f		-	28	-	
Total gate charge	Q _g	V _{DS} =520V, V _{GS} =10V, I _D =7A Fig. 12 ④⑤	-	49	-	nC
Gate-source charge	Q _{gs}		-	8.4	-	
Gate-drain charge	Q _{gd}		-	22.1	-	

Source-Drain Diode Ratings and Characteristics

(T_c=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Units
Source current (DC)	I _S	Integral reverse diode in the MOSFET	-	-	7	A
Source current (Pulsed) ①	I _{SP}		-	-	28	
Diode forward voltage ④	V _{SD}	V _{GS} =0V, I _S =7A	-	-	1.4	V
Reverse recovery time	t _{rr}	I _S =7A dI _S /dt=100A/μs ④	-	320	-	ns
Reverse recovery charge	Q _{rr}		-	2.4	-	uC

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② L=15.7mH, I_{AS}=7A, V_{DD}=50V, R_G=27Ω
- ③ I_S ≤ 7A, di/dt ≤ 300A/μs, V_{DD}=100V
- ④ Pulse Test : Pulse width ≤ 400 μs, Duty cycle ≤ 2%
- ⑤ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 $I_D - V_{DS}$

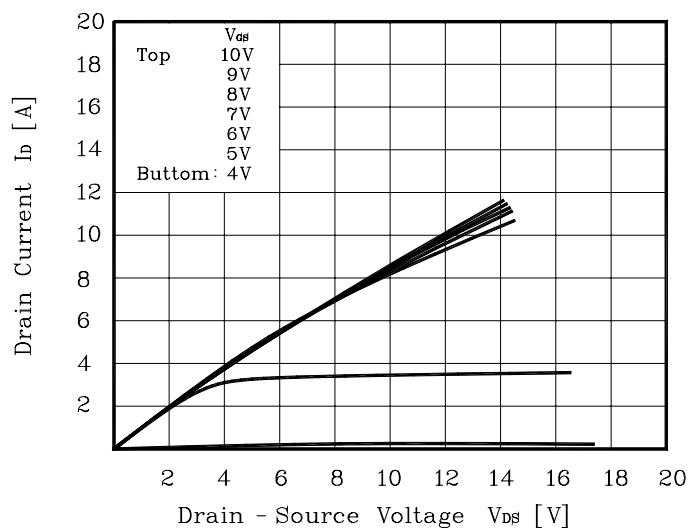


Fig. 2 $I_D - V_{GS}$

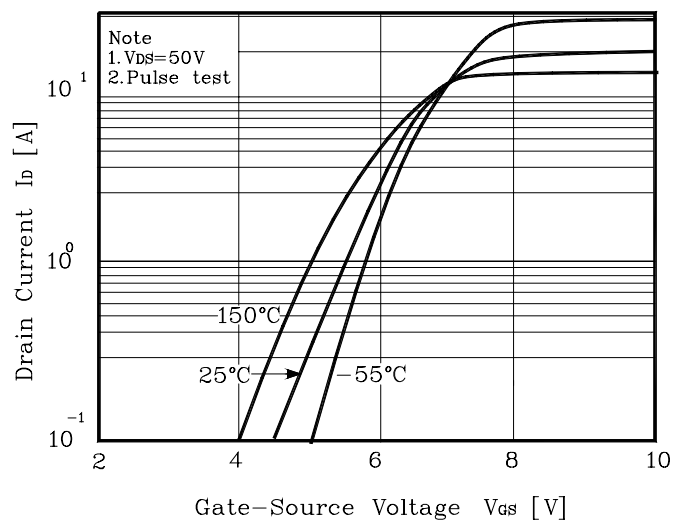


Fig. 3 $R_{DS(on)} - I_D$

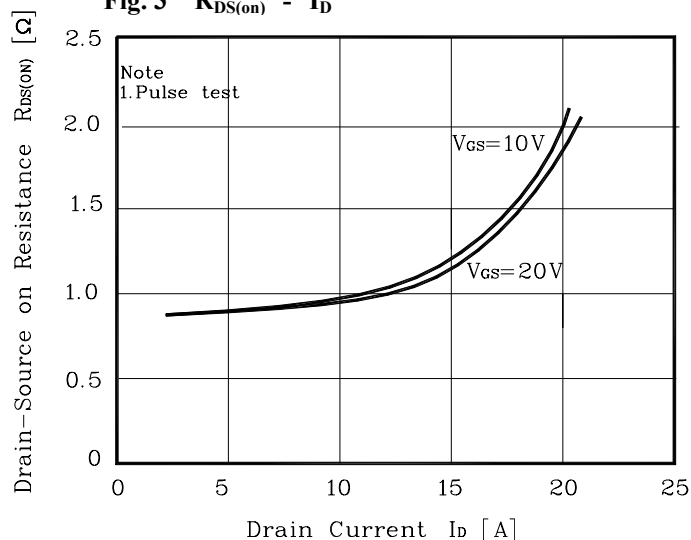


Fig. 4 $I_S - V_{SD}$

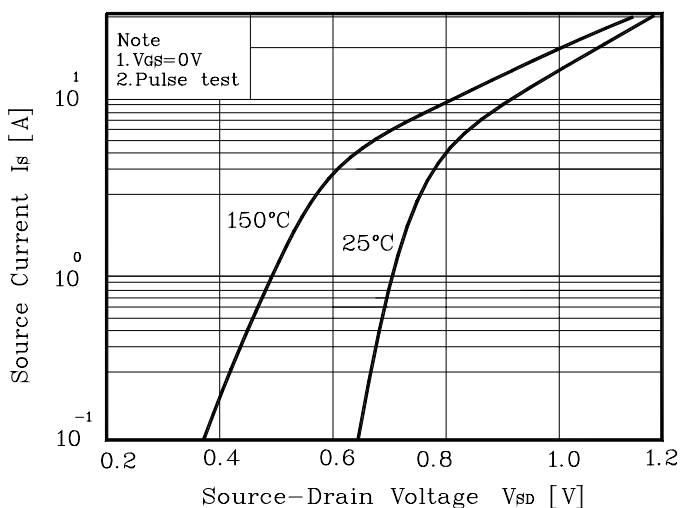


Fig. 5 Capacitance - V_{DS}

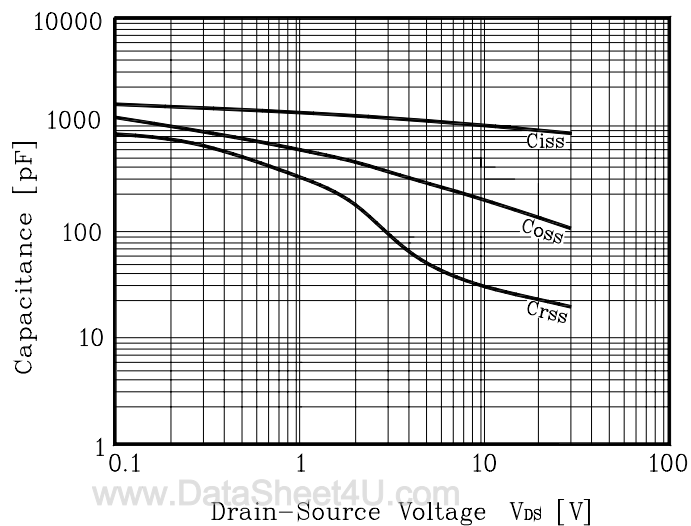


Fig. 6 $V_{GS} - Q_G$

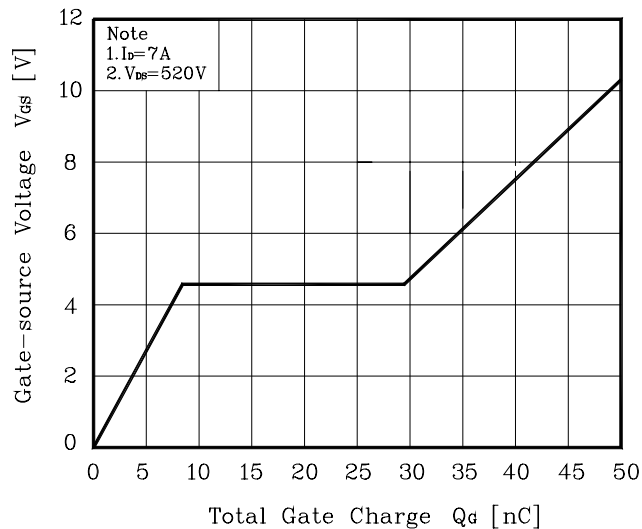


Fig. 7 $V_{(BR)DSS} - T_C$

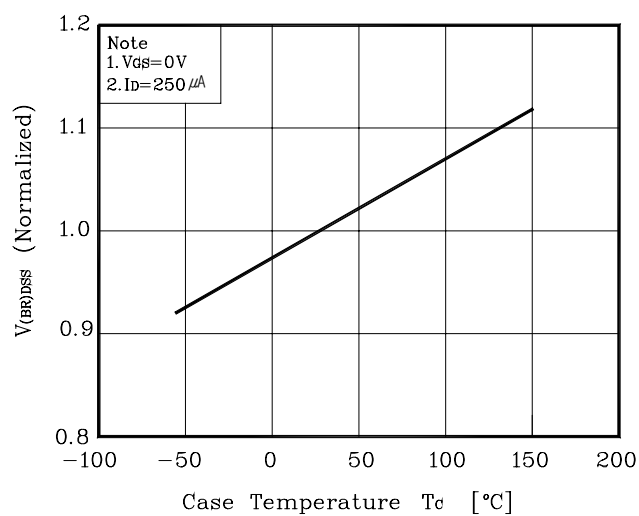


Fig. 8 Safe Operating Area

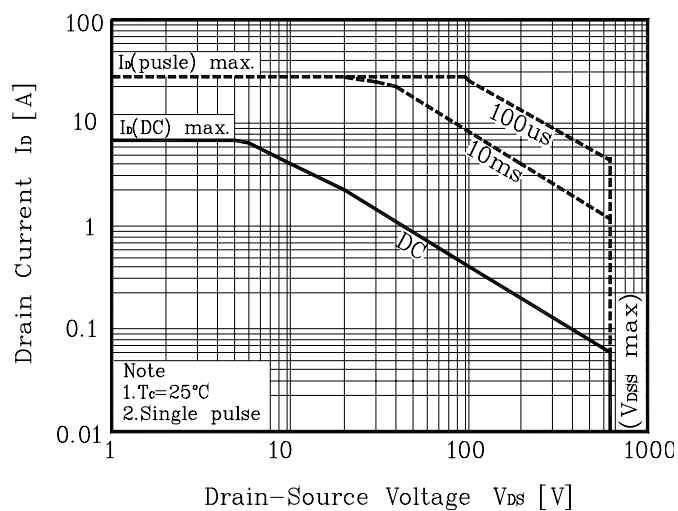


Fig. 11 Thermal Response

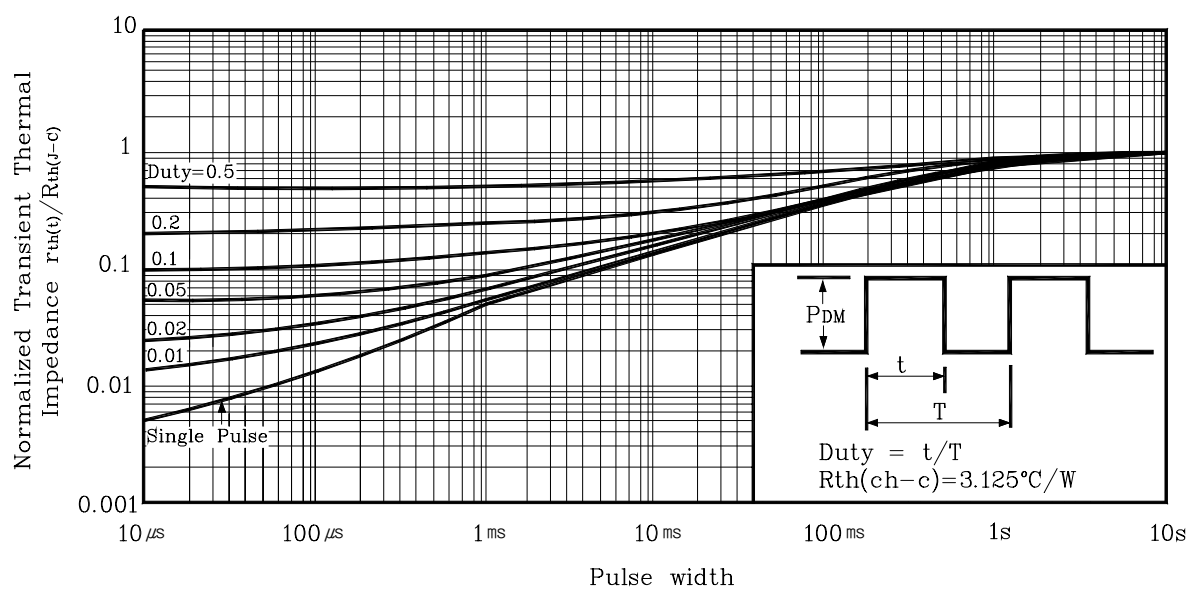


Fig. 12 Gate Charge Test Circuit & Waveform

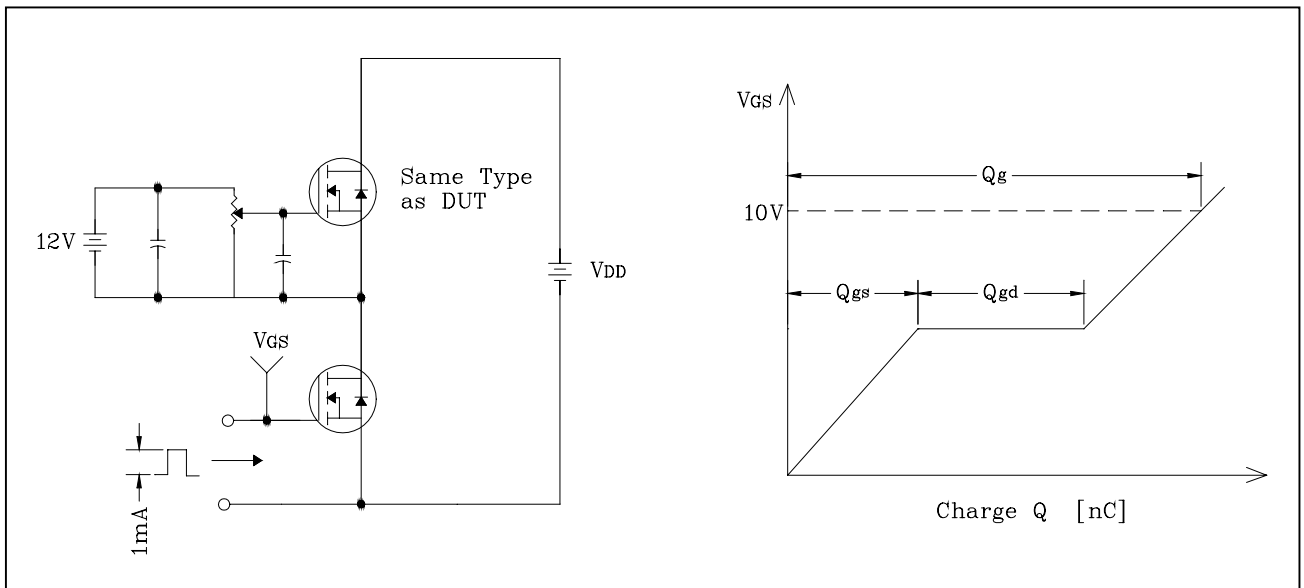


Fig. 13 Switching Time Test Circuit & Waveform

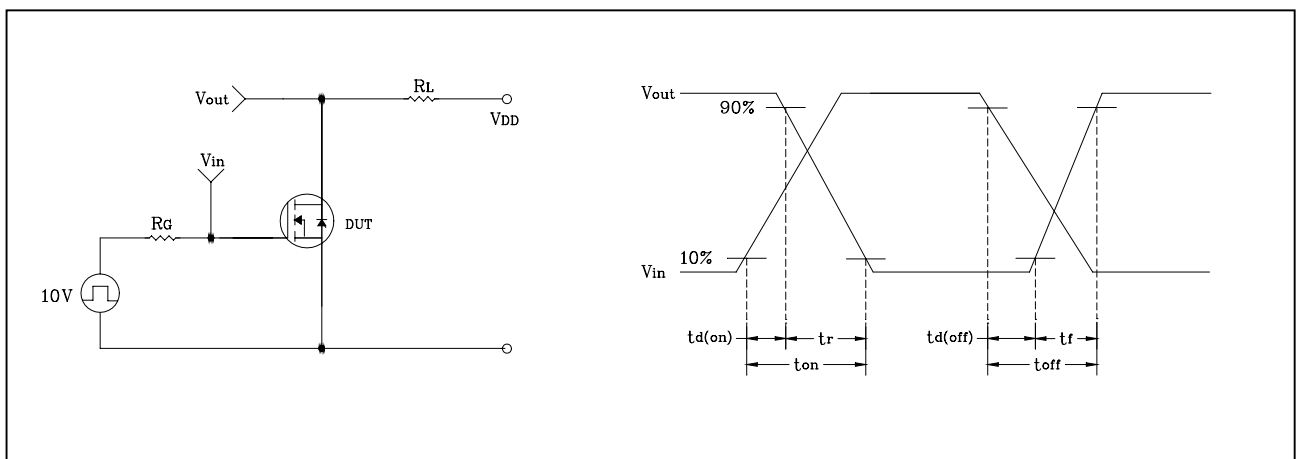


Fig. 14 E_{AS} Test Circuit & Waveform

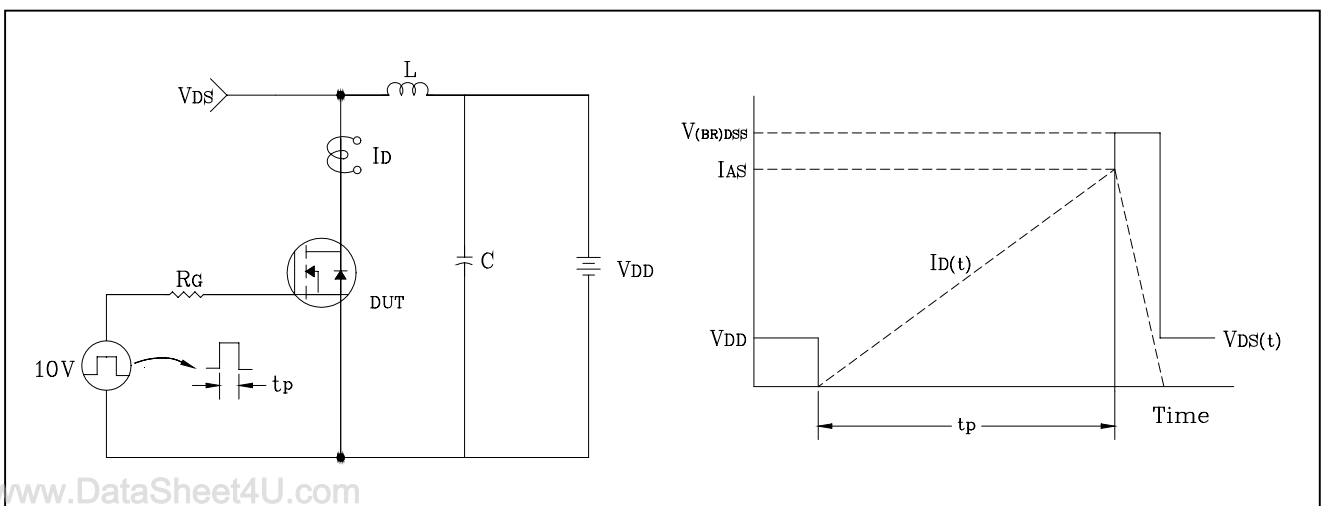
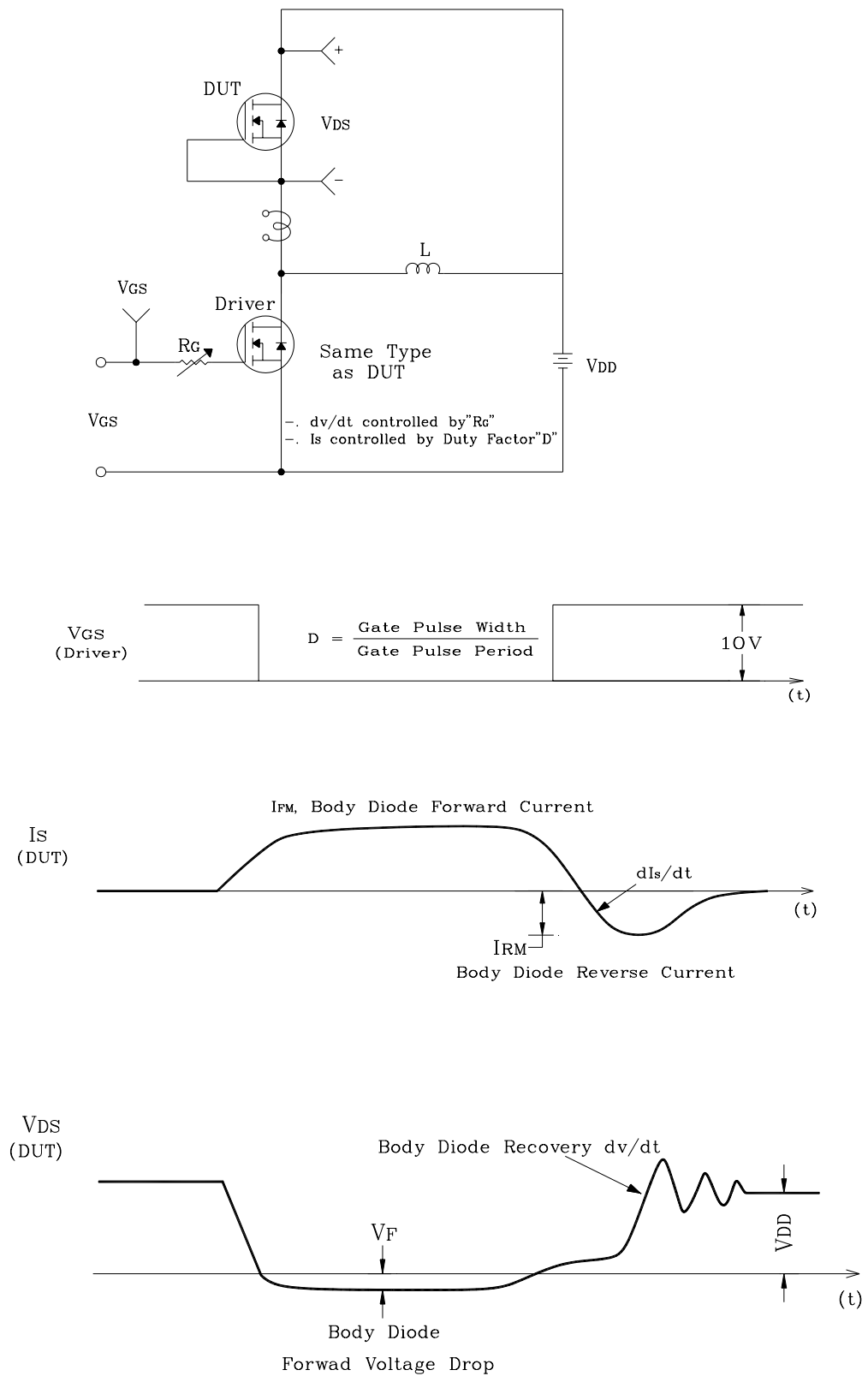


Fig. 15 Peak Diode Recovery dv/dt Test Circuit & Waveform



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