

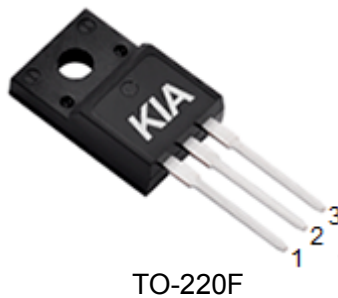
1. Features

- Proprietary New Planar Technology
- RoHS Compliant
- $R_{DS(ON)}=0.45\Omega(\text{typ.})@V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

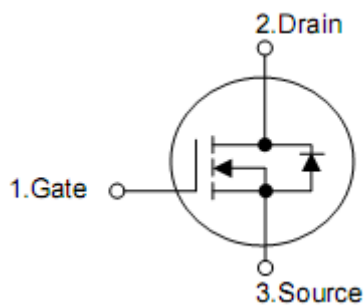
2. Applications

- Adaptor
- Charger
- SMPS Standby Power

3. Pin configuration



TO-220F



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNF6765A	TO-220F	KIA

5. Absolute maximum ratings

(T_c= 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage ¹⁾	V _{DSS}	650	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current	I _D	16	A
Pulsed Drain Current at V _{GS} =10V ²⁾	I _{DM}	64	A
Single Pulse Avalanche Energy L=30mH ³⁾	EAS	1100	mJ
Power Dissipation	P _D	65	W
Derating Factor above 25°C	P _D	0.52	W/°C
Maximum Temperature for Soldering Leads at 0.063in(1.6mm) from Case for 10 seconds, Package Body for 10 seconds	T _L T _{PAK}	300 260	°C
Operating and Storage Temperature Range	T _J &T _{STG}	-55 to 150	°C

Caution: Stresses greater than those in the “Absolute Maximum Ratings” may cause permanent damage to the device.

6. Thermal characteristics

Parameter	Symbol	Ratings	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	1.92	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	100	°C/W

7. Electrical characteristics

(T_C=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	650	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	1	uA
		V _{DS} =520V, T _J =125°C	-	-	100	uA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Drain-to-Source ON Resistance ⁴⁾	R _{DS(ON)}	V _{GS} =10V, I _D =8A	-	0.45	0.55	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	2.0	-	4.0	V
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1.0MHZ	-	2300	-	pF
Output Capacitance	C _{rss}		-	100	-	
Reverse Transfer Capacitance	C _{oss}		-	220	-	
Total Gate Charge	Q _g	V _{DD} =325V, I _D =16A, V _{GS} =10V	-	35	-	nC
Gate-to-Source Charge	Q _{gs}		-	10	-	
Gate-to-Drain (Miller) Charge	Q _{gd}		-	6	-	
Turn-on Delay Time	t _{d(ON)}	V _{DD} =325V, I _D =16A, R _G =25Ω, V _{GS} =10V	-	30	-	nS
Rise Time	t _{rise}		-	40	-	
Turn-Off Delay Time	t _{d(OFF)}		-	80	-	
Fall Time	t _{fall}		-	40	-	
Continuous Source Current ⁴⁾	I _{SD}	Integral pn-diode in MOSFET	-	-	16	A
Pulsed Source Current ²⁾	I _{SM}		-	-	64	A
Forward Voltage	V _{SD}	I _S =16A, V _{GS} =0V	-	-	1.5	V
Reverse recovery time	t _{rr}	I _S =16A, V _{GS} =10V di/dt=100A/us,	-	550	-	ns
Reverse recovery charge	Q _{rr}		-	4.2	-	uC

Note:

1) T_J=+25°C to +150

2) Repetitive rating; pulse width limited by maximum junction temperature.

3) I_{SD}=16A, di/dt<100A/us, V_{DD}<BV_{DSS}, T_J=+150.

4) Pulse width≤380us; duty cycle≤2%.

8. Typical Characteristics

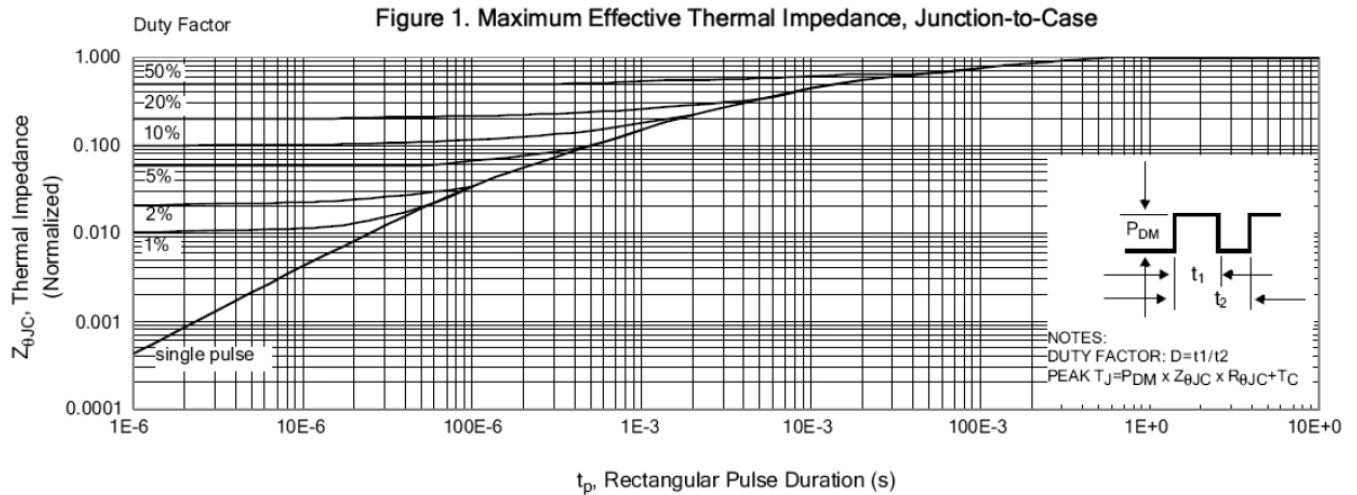


Figure 2. Maximum Power Dissipation vs Case Temperature

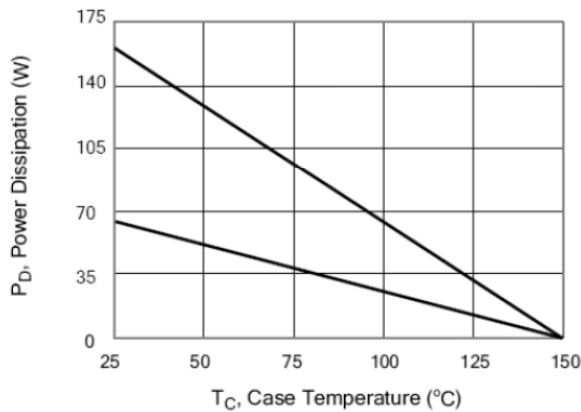


Figure 4. Typical Output Characteristics

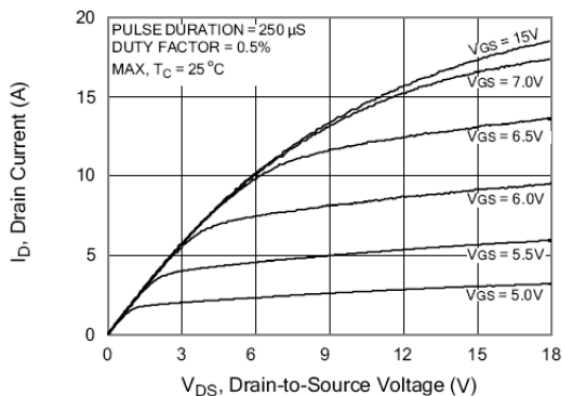


Figure 3. Maximum Continuous Drain Current vs Case Temperature

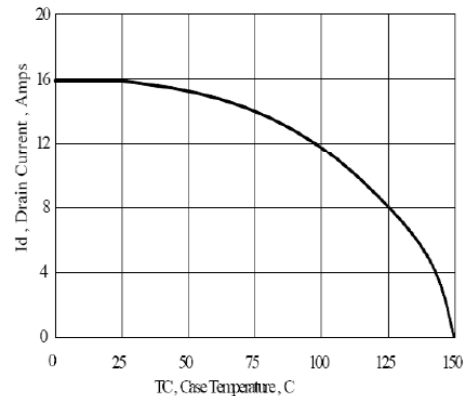


Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

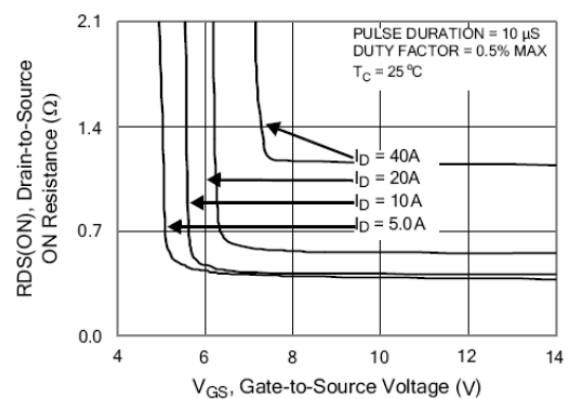


Figure 6. Peak Current Capability

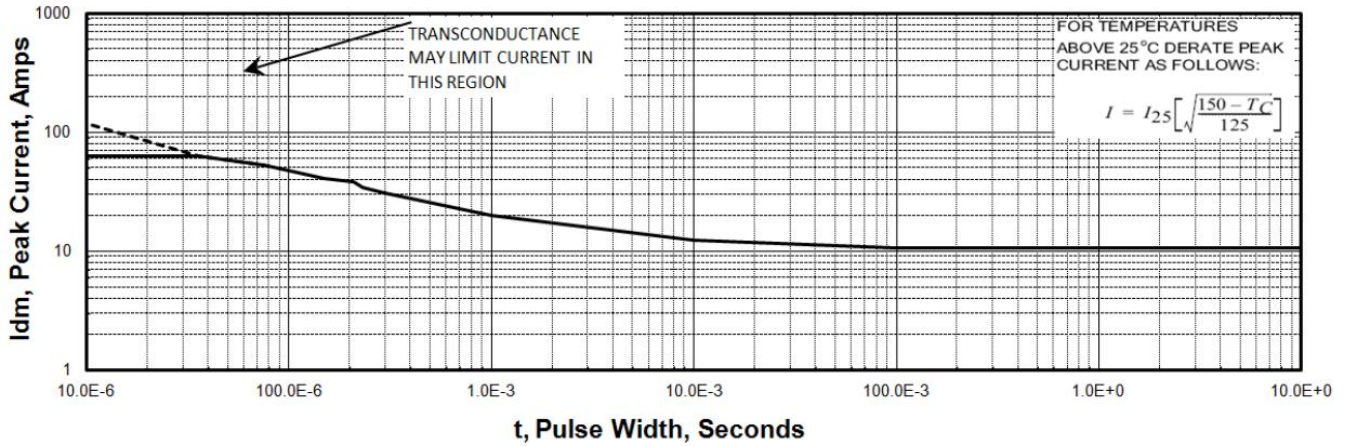


Figure 7. Typical Transfer Characteristics

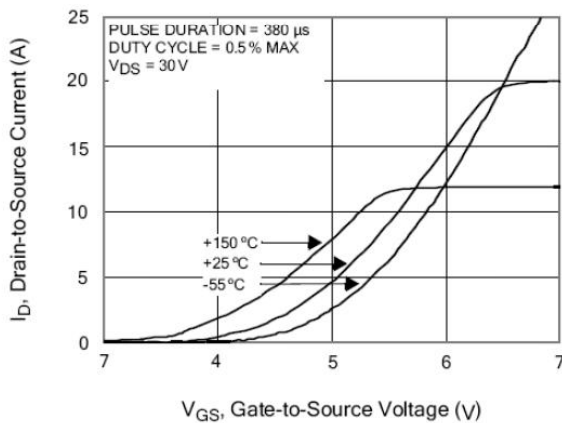


Figure 8. Unclamped Inductive Switching Capability

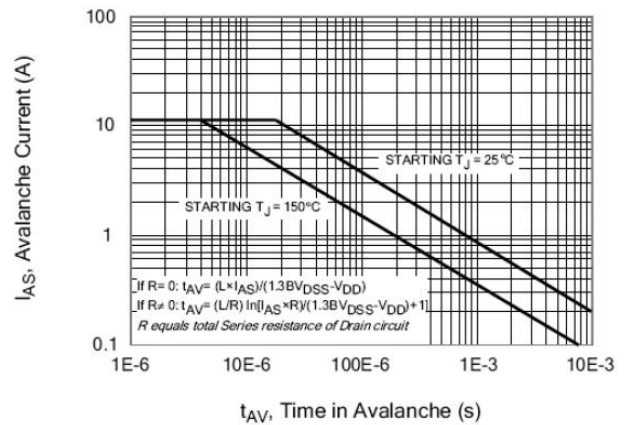


Figure 9. Drain to Source ON Resistance vs Drain Current

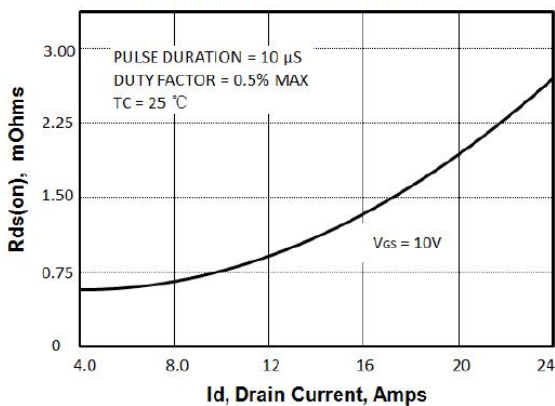


Figure 10. Rds(on) vs Junction Temperature

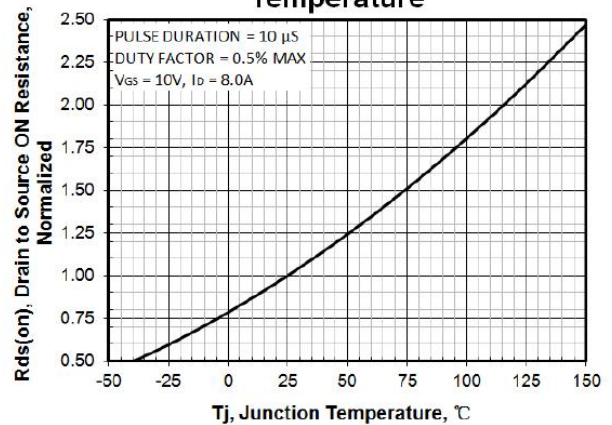


Figure 11. Breakdown Voltage vs Temperature

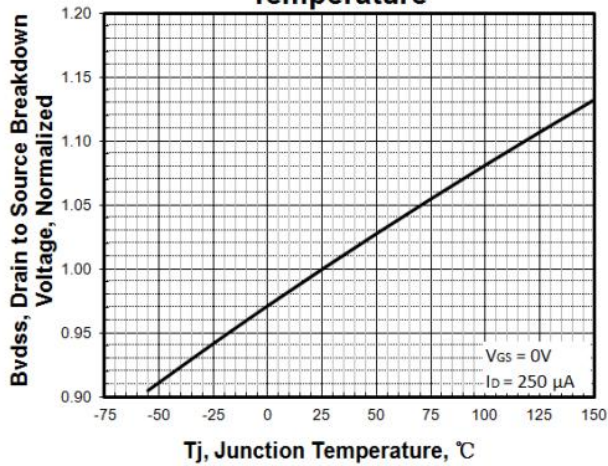


Figure 12. Threshold Voltage vs Temperature

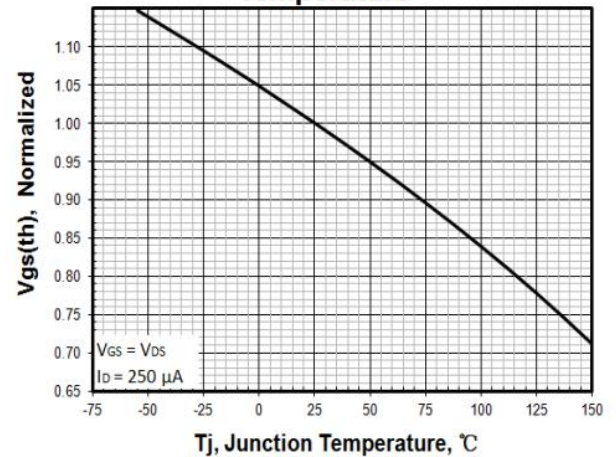


Figure 13 . Maximum Safe Operating Area

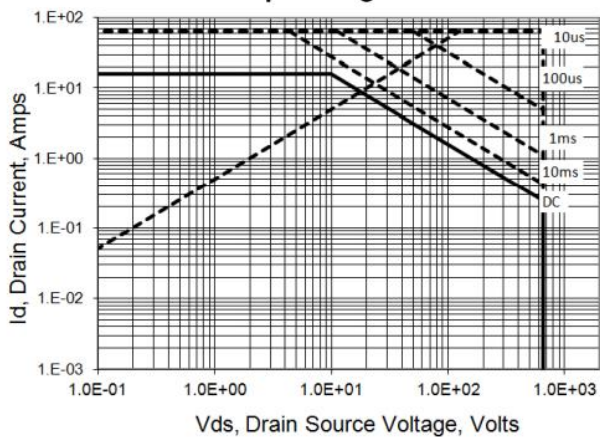


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

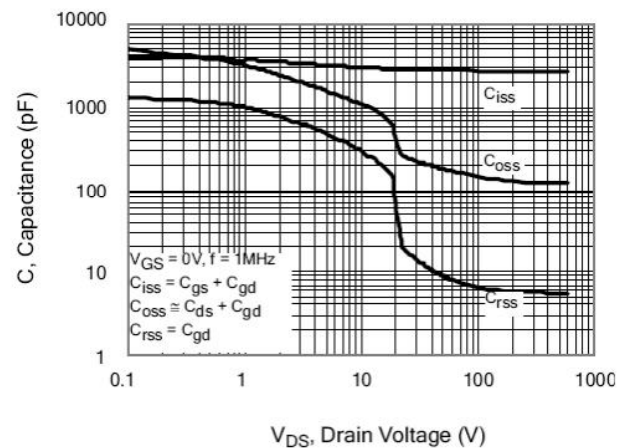


Figure 15 . Typical Gate Charge

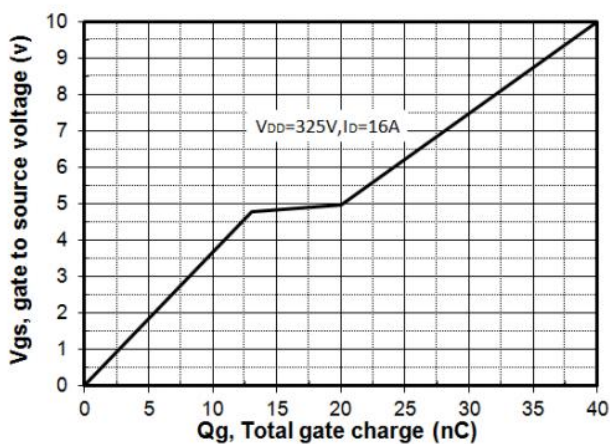
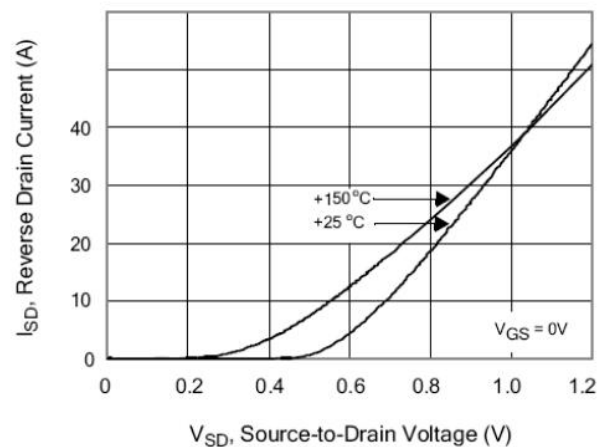


Figure 16. Typical Body Diode Transfer Characteristics



9. Test Circuits and Waveforms

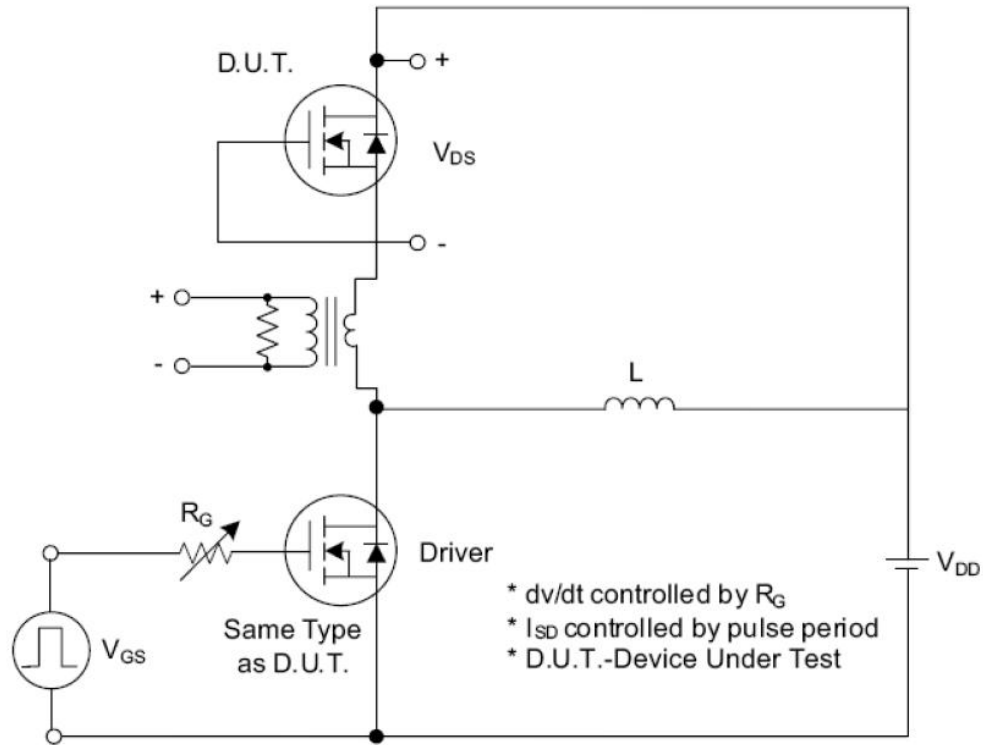


Fig. 1.1 Peak Diode Recovery dv/dt Test Circuit

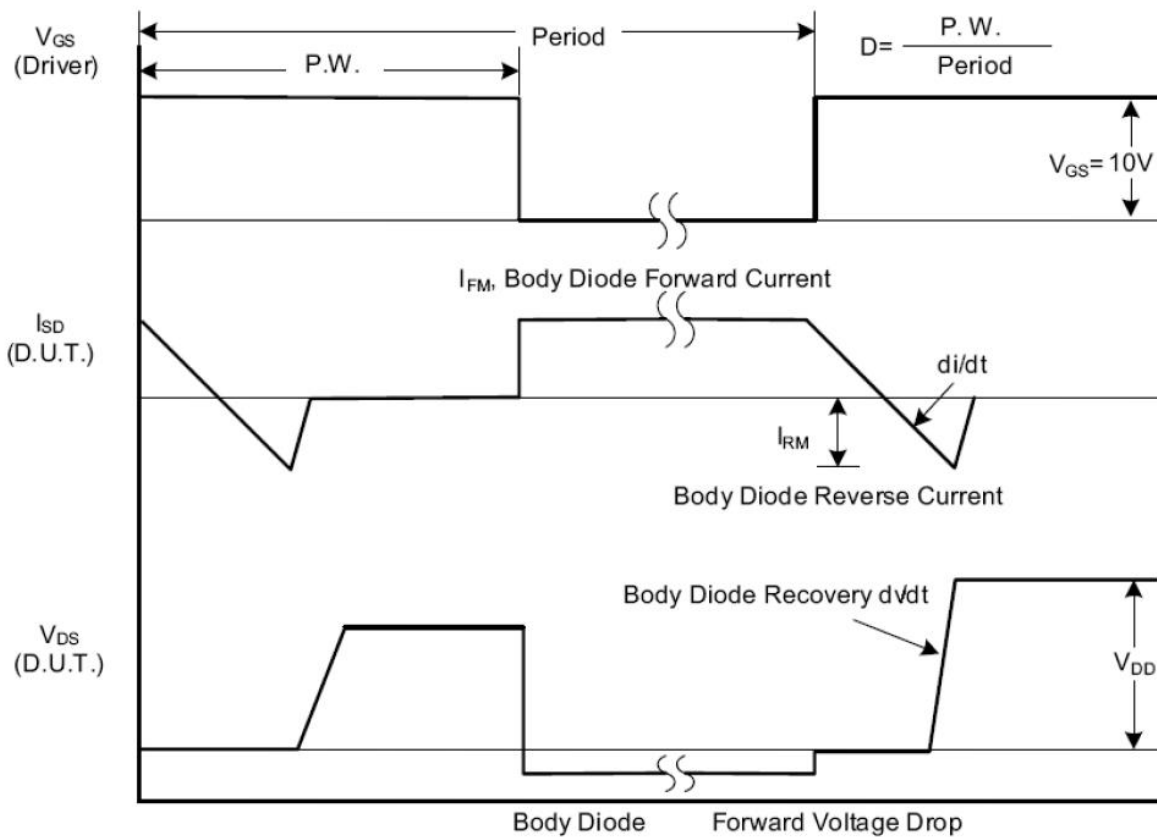


Fig. 1.2 Peak Diode Recovery dv/dt Waveforms