

General Description

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for load switch and battery powered applications

FEATURES

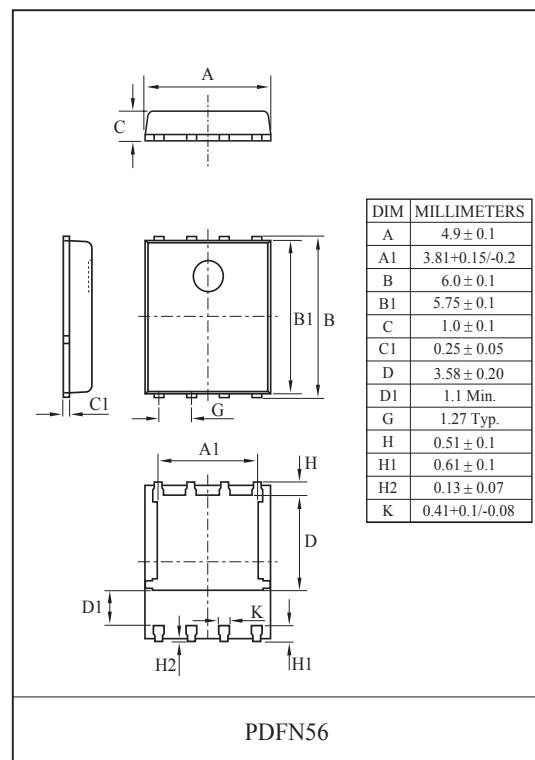
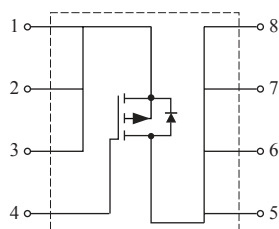
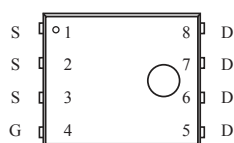
- $V_{DS} = -30V$, $I_D = -70A$
- Drain-Source ON Resistance :
 $R_{DS(ON)} = 8m\Omega$ (Max.) @ $V_{GS} = -10V$

MAXIMUM RATING (Tc=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current (Note 1)	@T _C =25°C	I_D	-70	A
	@T _C =100°C		-45	
	@T _a =25°C		-16	
	Pulsed (Note4)	I_{DP}	-210	
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	474	mJ
Repetitive Avalanche Energy (Note 1,4)		E_{AR}	7.3	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Drain Power Dissipation	Tc=25°C	P_D	80	W
	Derate above 25°C		0.64	W/°C
	@T _a =25°C		4	W
Maximum Operating Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C
Thermal Characteristics				
Thermal Resistance, Junction-to-Case		R_{thJC}	1.56	°C/W
Thermal Resistance, Junction-to-Ambient		R_{thJA}	30	°C/W

* : Surface mounted on 25mm×25mm FR4 Board, t≤10 sec.

PIN CONNECTION



KU080P03C

ELECTRICAL CHARACTERISTICS (T_j=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250 μA, V _{GS} =0V	-30	-	-	V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _j	I _D =1mA, Referenced to 25℃	-	0.03	-	V/℃
Drain Cut-off Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V,	-	-	-1	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =-250 μA	-1	-	-2	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-2A (Note4)	-	6.5	8	mΩ
		V _{GS} =-4.5V, I _D =-2A (Note4)	-	7.8	10	
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-20A V _{GS} =-4.5V (Note4)	-	42	-	nC
Gate-Source Charge	Q _{gs}		-	13	-	
Gate-Drain Charge	Q _{gd}		-	13	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =-15V I _D =-20A R _G =3.3Ω V _{GS} =-10V (Note4)	-	12	-	ns
Turn-on Rise time	t _r		-	55	-	
Turn-off Delay time	t _{d(off)}		-	450	-	
Turn-off Fall time	t _f		-	182	-	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1.0MHz	-	4810	-	pF
Output Capacitance	C _{oss}		-	450	-	
Reverse Transfer Capacitance	C _{rss}		-	338	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	-20	A
Pulsed Source Current	I _{SP}	V _{GS} <V _{th} (Note4)	-	-	-80	
Diode Forward Voltage	V _{SD}	I _S =-20A, V _{GS} =0V	-	-	-1.2	V
Reverse Recovery Time	t _{rr}	I _S =-20A, V _{GS} =0V,	-	44	-	ns
Reverse Recovery Charge	Q _{rr}	dI _S /dt=-100A/ μs	-	64	-	nC

Note 1) Limited by junction temperature.

Note 2) L = 1.2mH, I_S=-20A, V_{DD}=-24V, R_G=25Ω, Starting T_j=25℃.

Note 3) I_S≤-20A, V_{DD}≤BV_{DSS}, Starting T_j=25℃.

Note 4) Pulse Test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%.

Marking

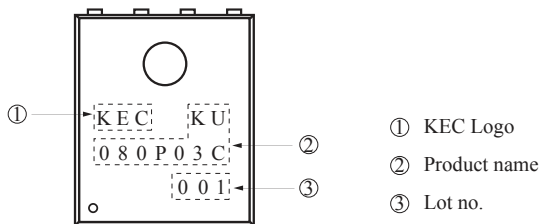


Fig 1. I_D - V_{DS}

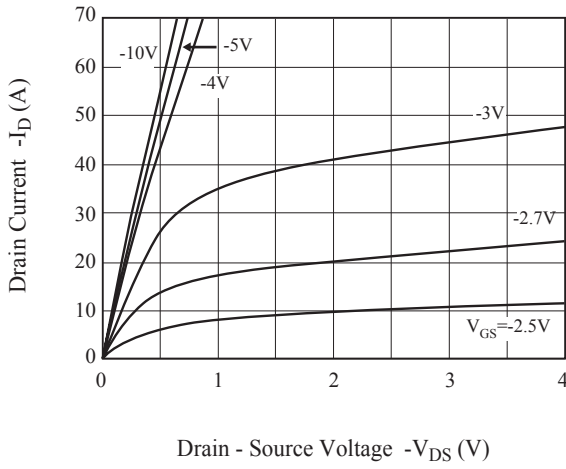


Fig 2. $R_{DS(on)}$ - I_D

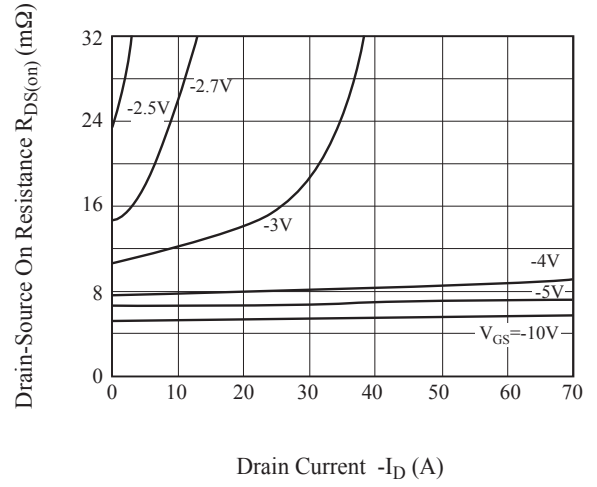


Fig 3. I_D - V_{GS}

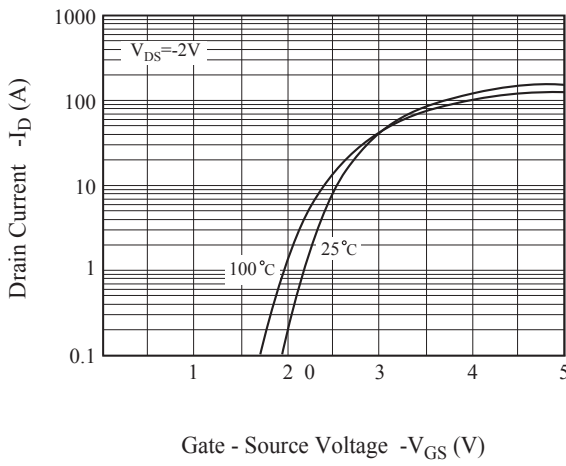


Fig 4. $R_{DS(on)}$ - T_j

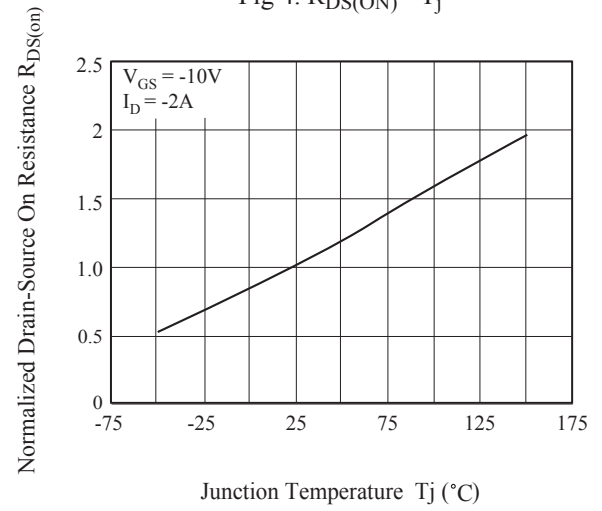


Fig 5. V_{th} - T_j

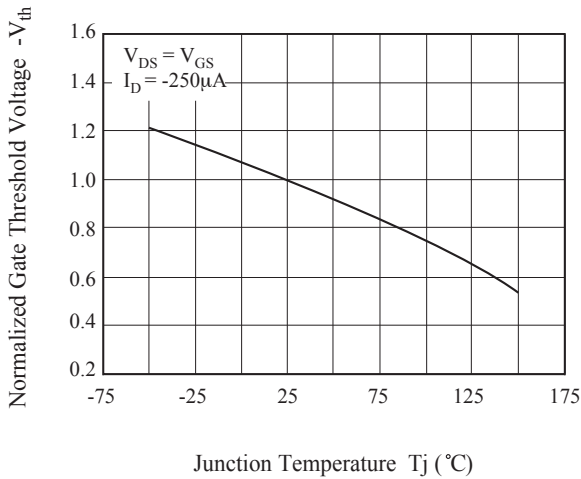


Fig 6. I_S - V_{SD}

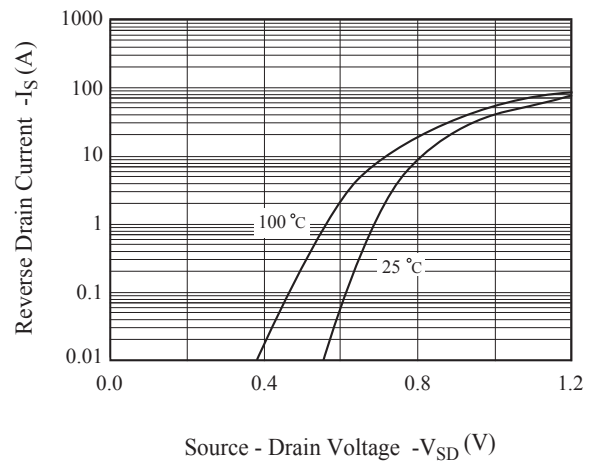


Fig7. Q_g - V_{GS}

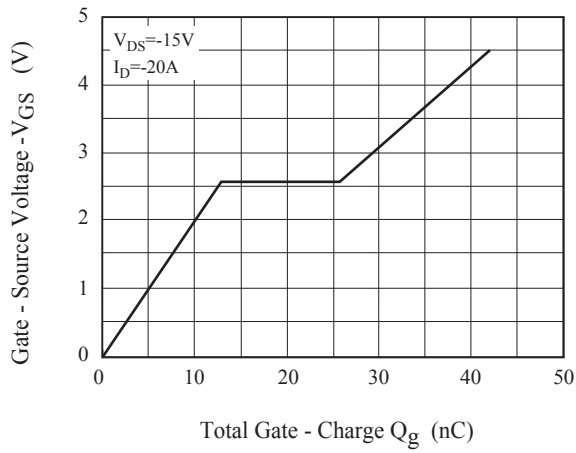


Fig 8. C - V_{DS}

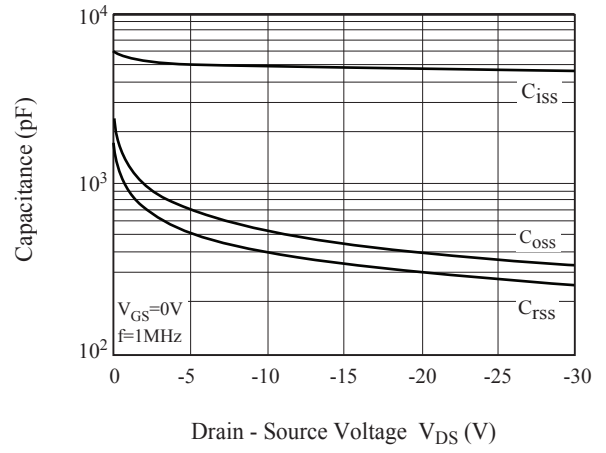


Fig 9. BV_{DSS} - T_j

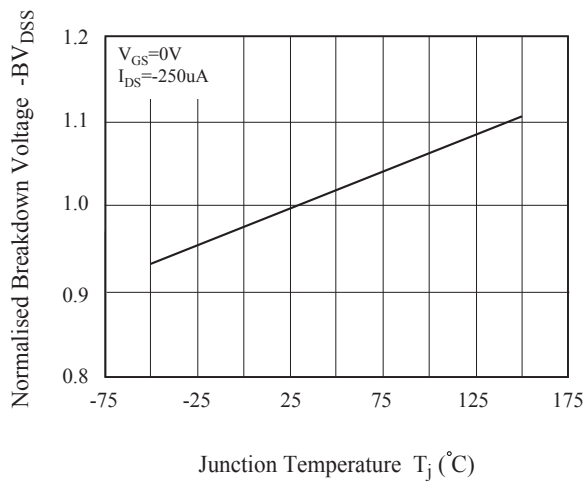


Fig10. $R_{DS(on)}$ - V_{GS}

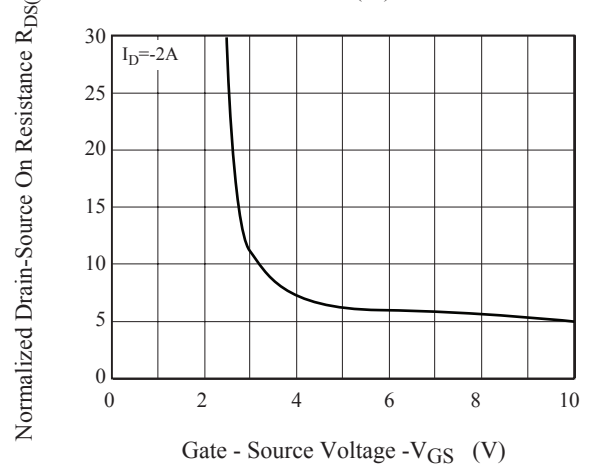


Fig11. Transient Thermal Response Curve

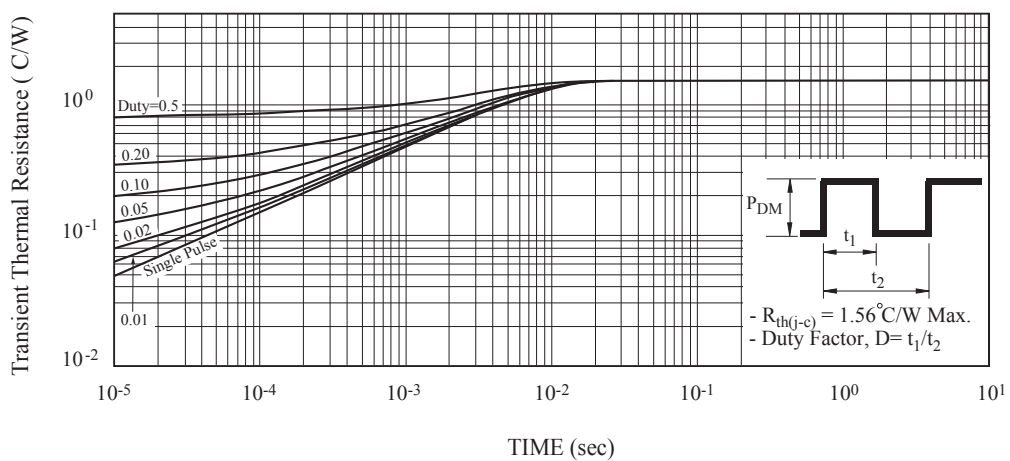


Fig12. Gate Charge

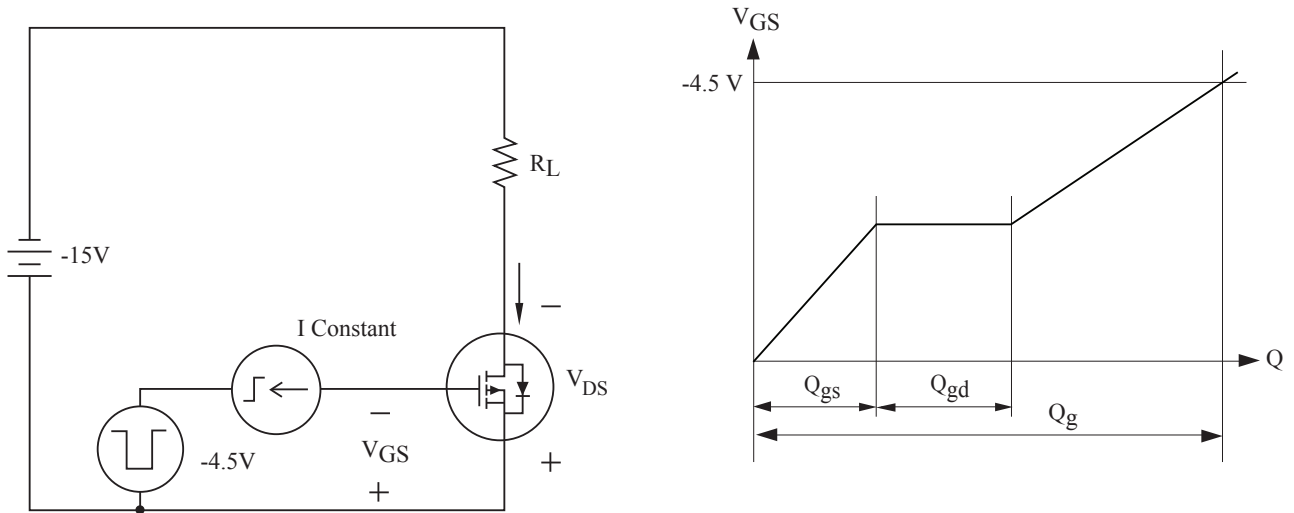


Fig13. Single Pulsed Avalanche Energy

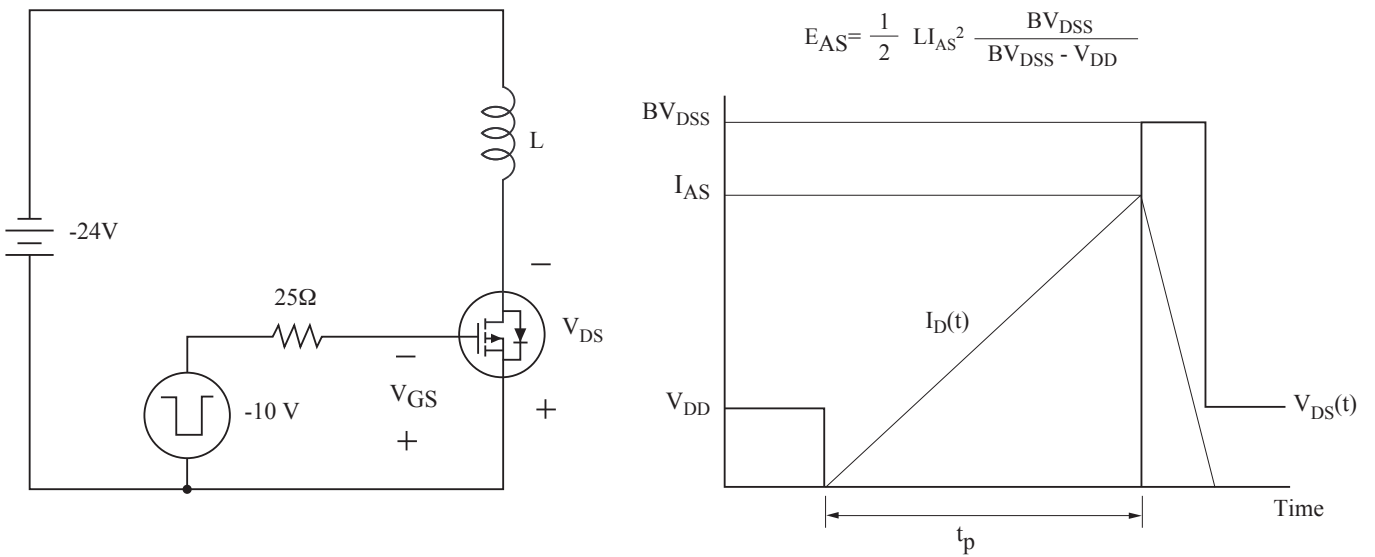


Fig14. Resistive Load Switching

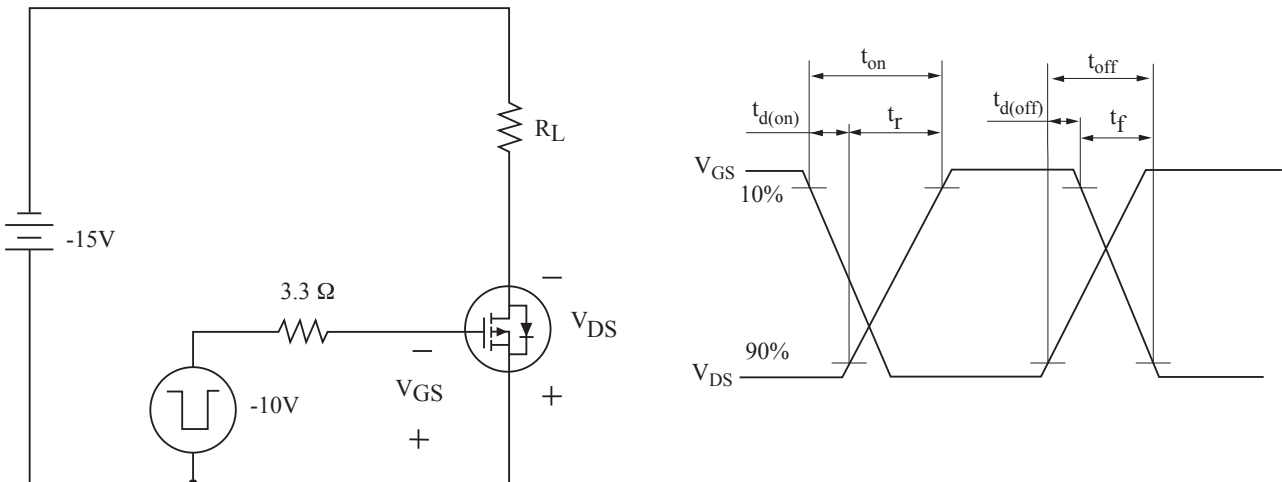
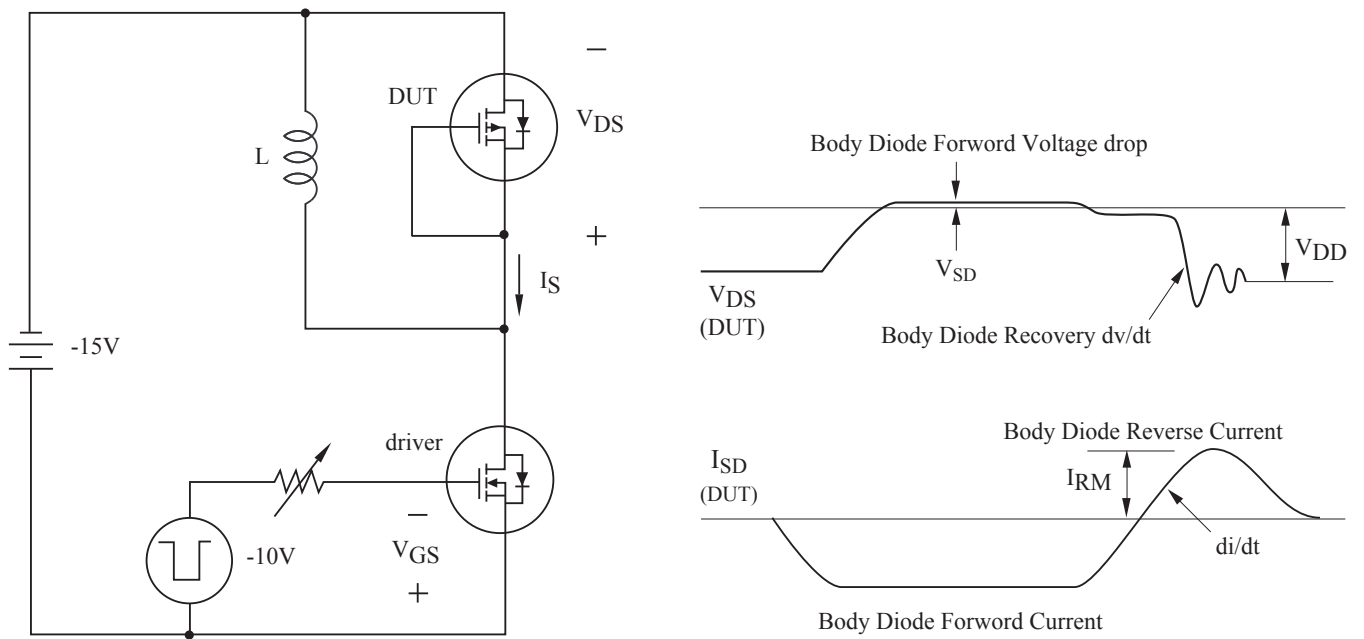
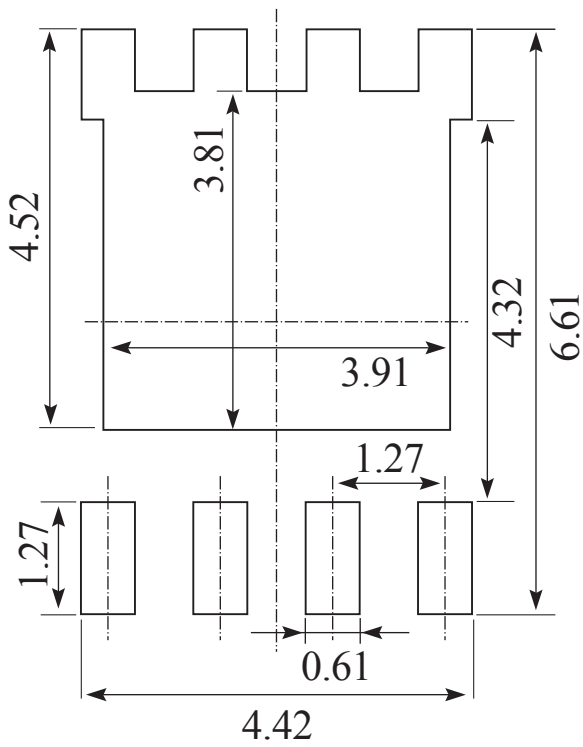


Fig15. Source - Drain Diode Reverse Recovery and dv/dt



Unit : mm



PDFN56