

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 LED Lighting and DC/DC Converters.

FEATURES

- $V_{DSS(Min.)} = 100V$, $I_D = 4.7A$
- Drain-Source ON Resistance : $R_{DS(ON)} = 0.36 \Omega$ (max) @ $V_{GS} = 10V$
- $Q_g(typ.) = 2.3nC$ (@ $V_{GS} = 4.5V$)

ORDERING INFORMATION

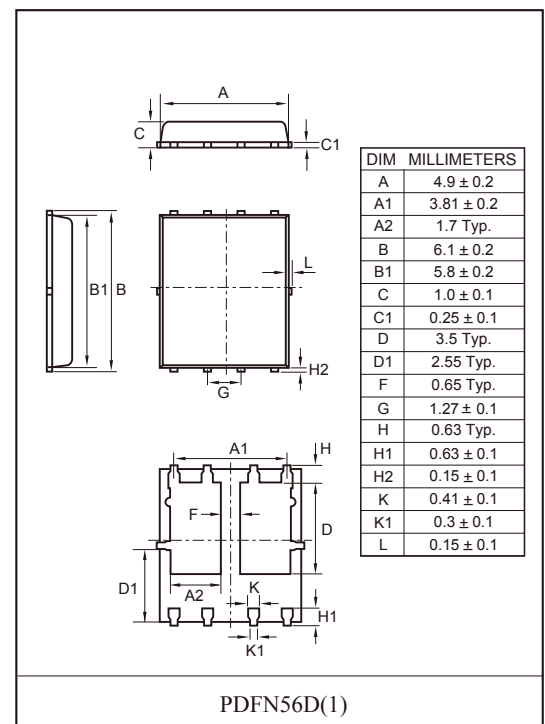
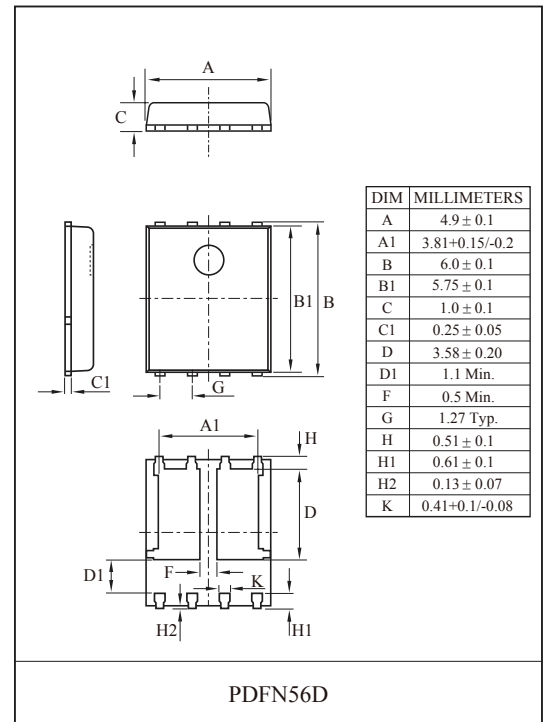
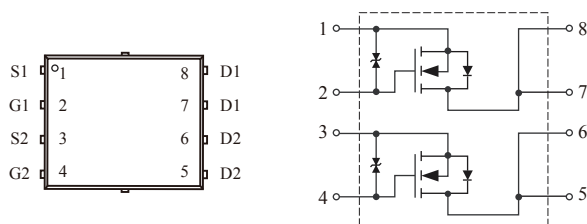
FULL NAME	PACKAGE	SUFFIX
KU3600DN10CZ-EL/H	PDFN56D	-
KU3600DN10CZ-EL/HG	PDFN56D(1)	Added code "G" to PDFN56D(1)

MAXIMUM RATING ($T_C = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 16	V
Drain Current	$T_C = 25^\circ C$	I_D	A
	$T_C = 100^\circ C$		
	$T_a = 25^\circ C$		
	Pulsed (Note 1)	I_{DP}	
Peak Diode Recovery dv/dt (Note 2)	dv/dt	4.5	V/ns
Drain Power Dissipation	$T_C = 25^\circ C$	P_D	W
	Derate above $25^\circ C$		$W/^\circ C$
	$T_a = 25^\circ C$		W
Maximum Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$
Thermal Characteristics			
Thermal Resistance, Junction-to-Case	R_{thJC}	7.6	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	50*	$^\circ C/W$

* : Surface Mounted on 25mm×25mm FR4 Board , $t \leq 10sec$.

PIN CONNECTION



KU3600DN10CZ

ELECTRICAL CHARACTERISTICS (T_c=25℃)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μ A, V _{GS} =0V	100	-	-	V
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _j	I _D =250μ A , Referenced to 25℃	-	0.1	-	V/℃
Drain Cut-off Current		I _{DSS}	V _{DS} =100V, V _{GS} =0V,	-	-	10	μA
Gate Threshold Voltage		V _{th}	V _{DS} =V _{GS} , I _D =250μ A	1.0	-	2.5	V
Gate Leakage Current		I _{GSS}	V _{GS} = ±10V, V _{DS} =0V	-	-	±10	μA
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =2.3A	-	0.30	0.36	Ω
			V _{GS} =4.5V, I _D =2.3A		-	0.44	
Dynamic							
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =50V, I _D =1.7A V _{GS} =10V (Note3,4)	-	4.5	-	nC
	V _{GS} =4.5V			-	2.3	3.0	
Gate-Source Charge		Q _{gs}		-	0.6	-	
Gate-Drain Charge		Q _{gd}		-	1.2	-	
Turn-on Delay time		t _{d(on)}	V _{DD} =50V, I _D =1.7A R _G =6Ω (Note3,4) V _{GS} =10V	-	10	-	ns
Turn-on Rise time		t _r		-	5	-	
Turn-off Delay time		t _{d(off)}		-	35	-	
Turn-off Fall time		t _f		-	6	-	
Input Capacitance		C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	210	-	pF
Output Capacitance		C _{oss}		-	30	-	
Reverse Transfer Capacitance		C _{rss}		-	13	-	
Source-Drain Diode Ratings							
Continuous Source Current		I _S	V _{GS} <V _{th}	-	-	1	A
Pulsed Source Current		I _{SP}		-	-	4	
Diode Forward Voltage		V _{SD}	I _S =1A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time		t _{rr}	I _S =1.7A, V _{GS} =0V,	-	30	-	ns
Reverse Recovery Charge		Q _{rr}	dIs/dt=100A/μs	-	40	-	nC

Note 1) Repetivity rating : Pulse width limited by junction temperature.

Note 2) I_S ≤ 1.7A, dI/dt ≤ 100A/μs, V_{DD} ≤ BV_{DSS}, Starting T_j = 25℃.

Note 3) Pulse Test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%.

Note 4) Essentially independent of operating temperature.

Marking

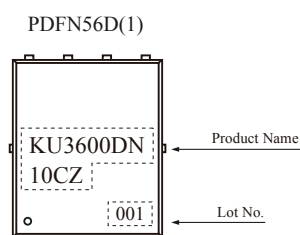
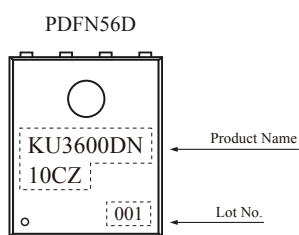


Fig1. $V_{DS} - I_D$

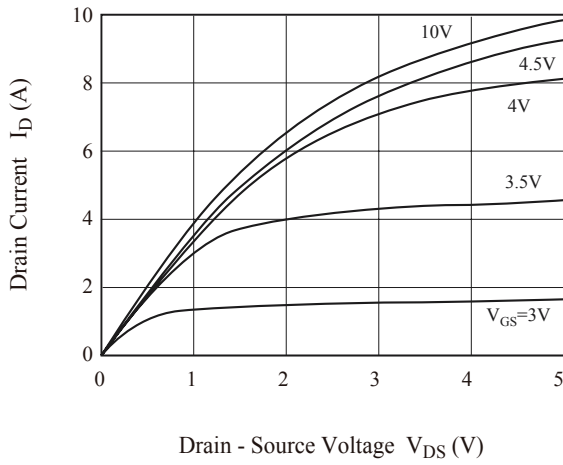


Fig2. $R_{DS(ON)} - I_D$

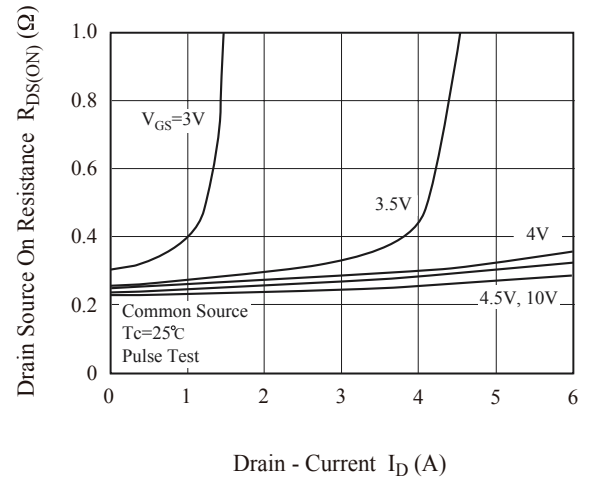


Fig3. $I_D - V_{GS}$

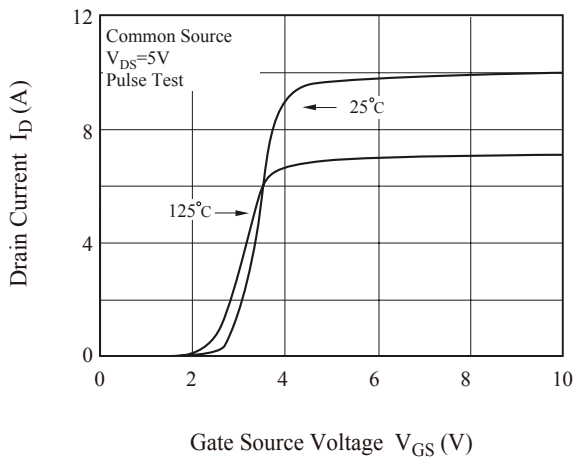


Fig4. $R_{DS(ON)} - T_j$

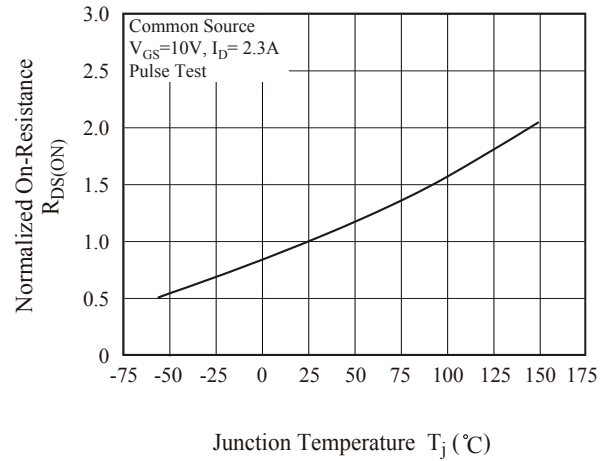


Fig5. $V_{th} - T_j$

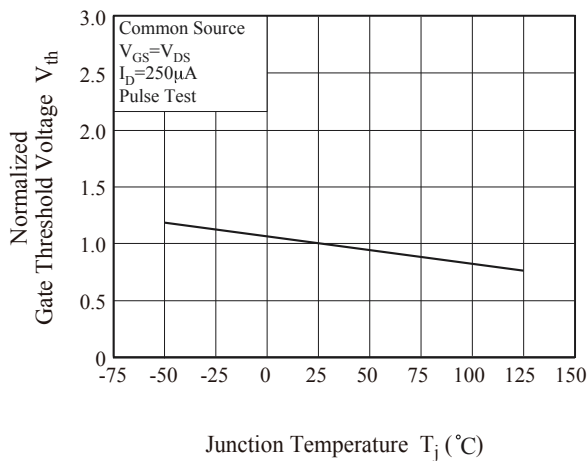


Fig6. $I_S - V_{SDF}$

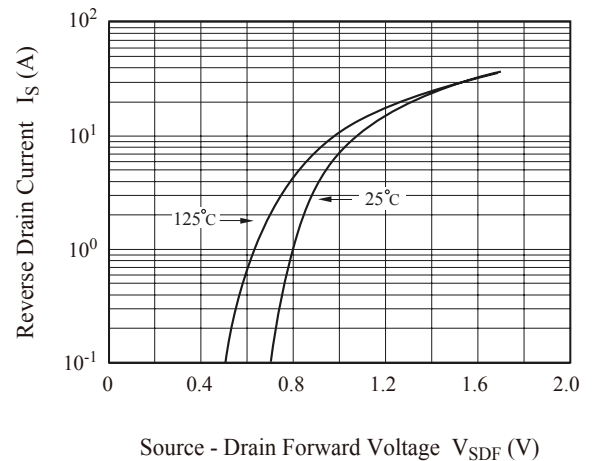


Fig7. $BV_{DSS} - T_j$

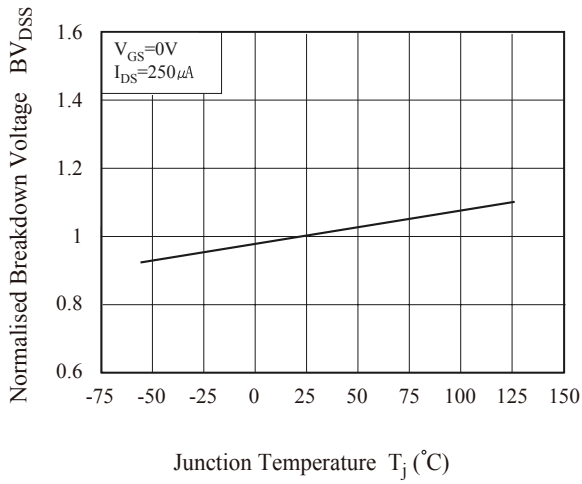


Fig8. $C - V_{DS}$

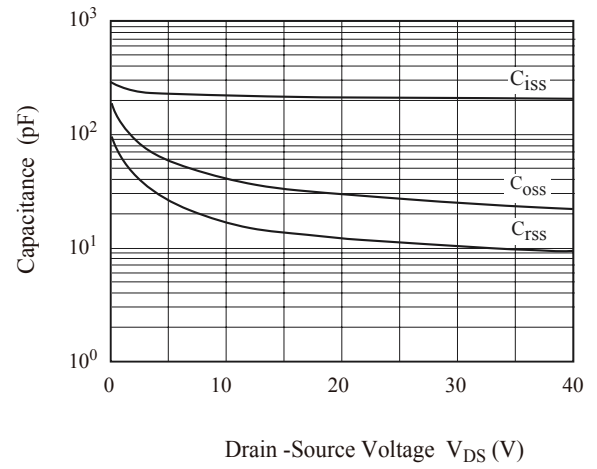


Fig9. $Q_g - V_{GS}$

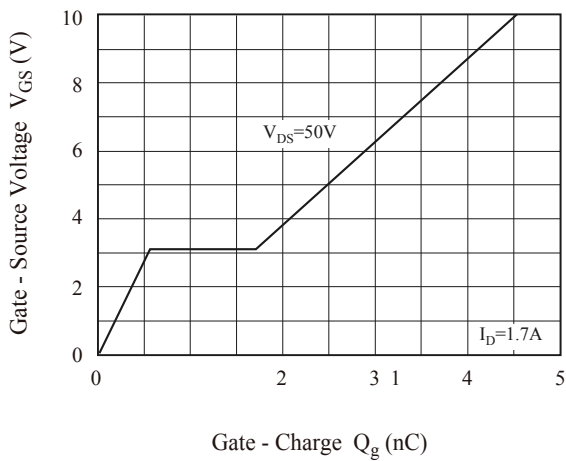


Fig10. Safe Operation Area

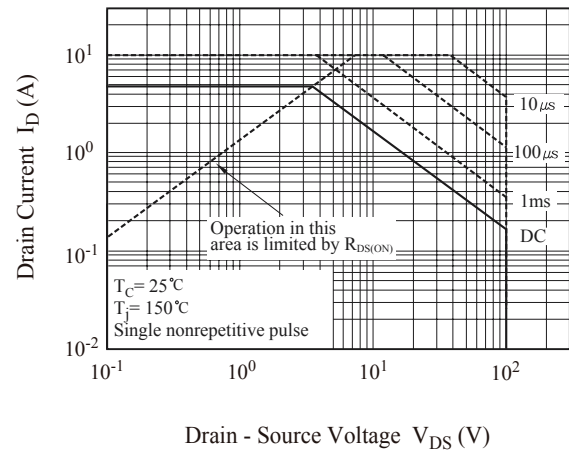


Fig11. Transient Thermal Response Curve

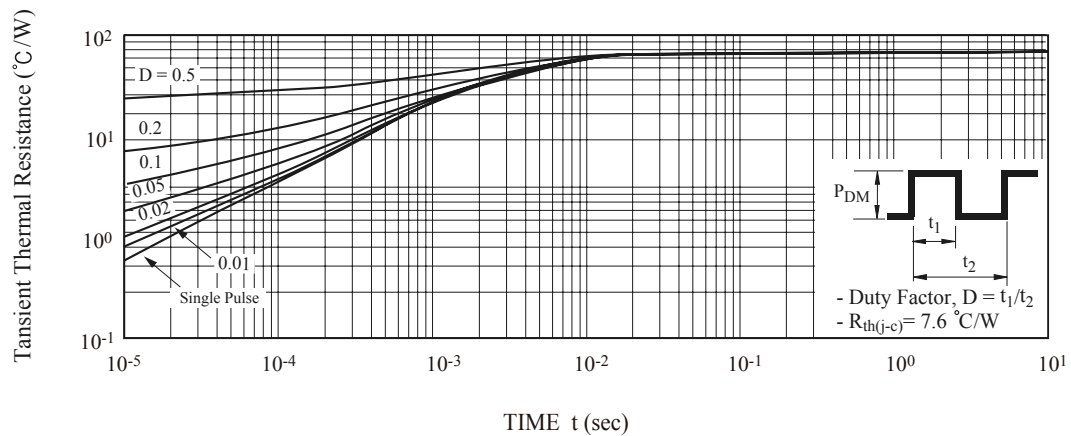


Fig12. Gate Charge

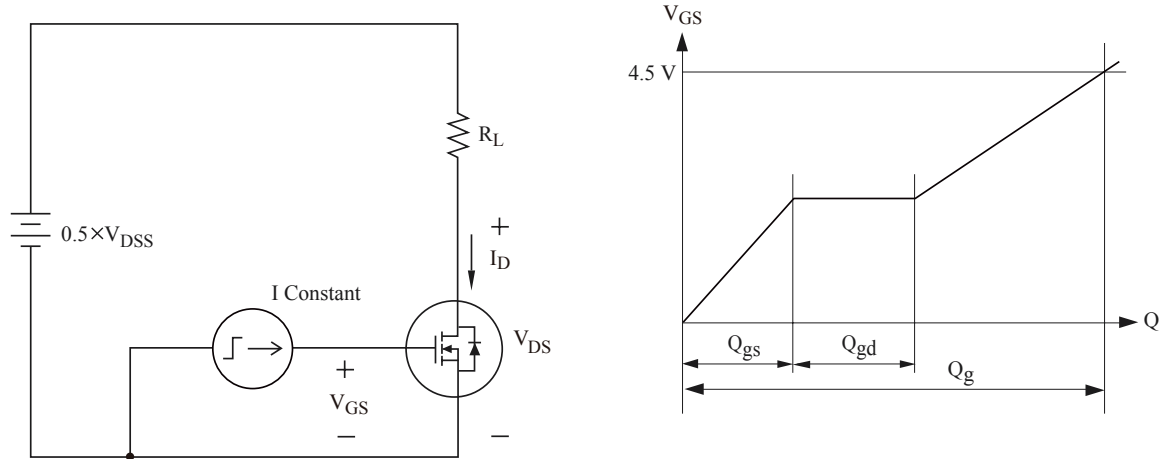


Fig13. Resistive Load Switching

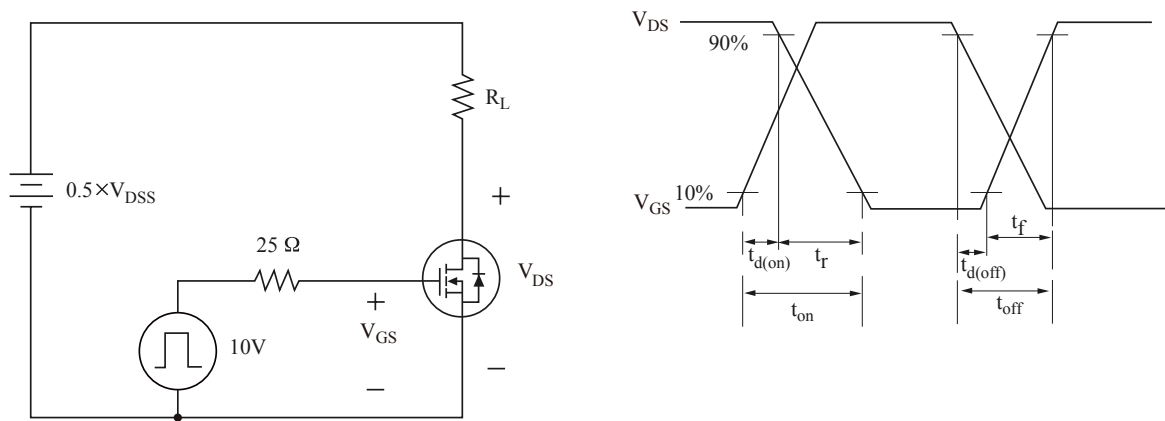


Fig14. Source - Drain Diode Reverse Recovery and dv/dt

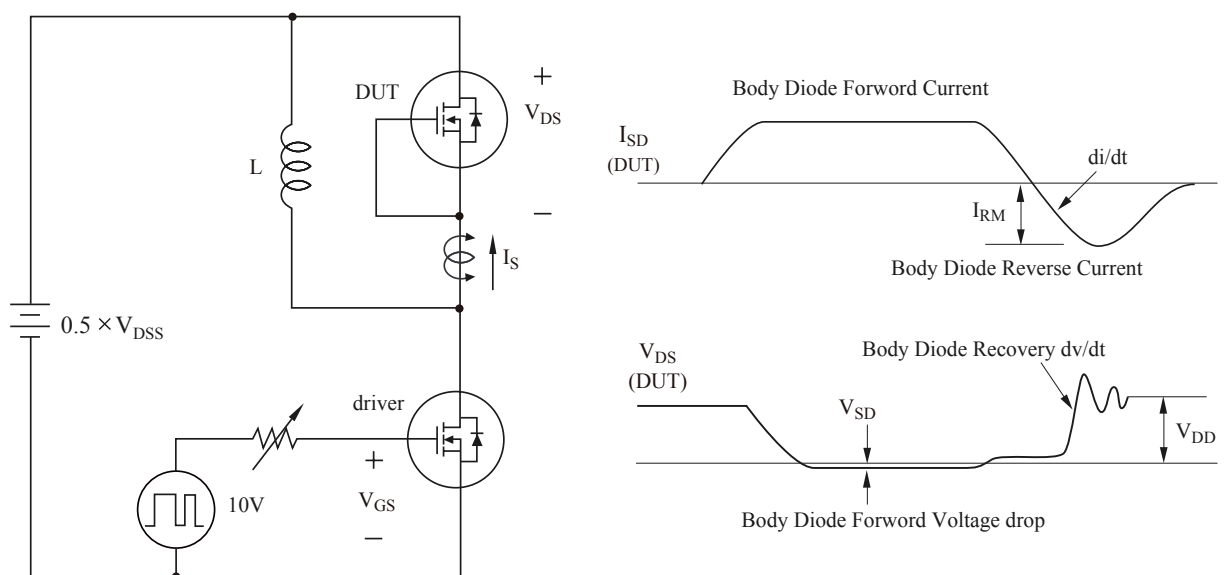


Fig 15. Recommended Pad Dimension

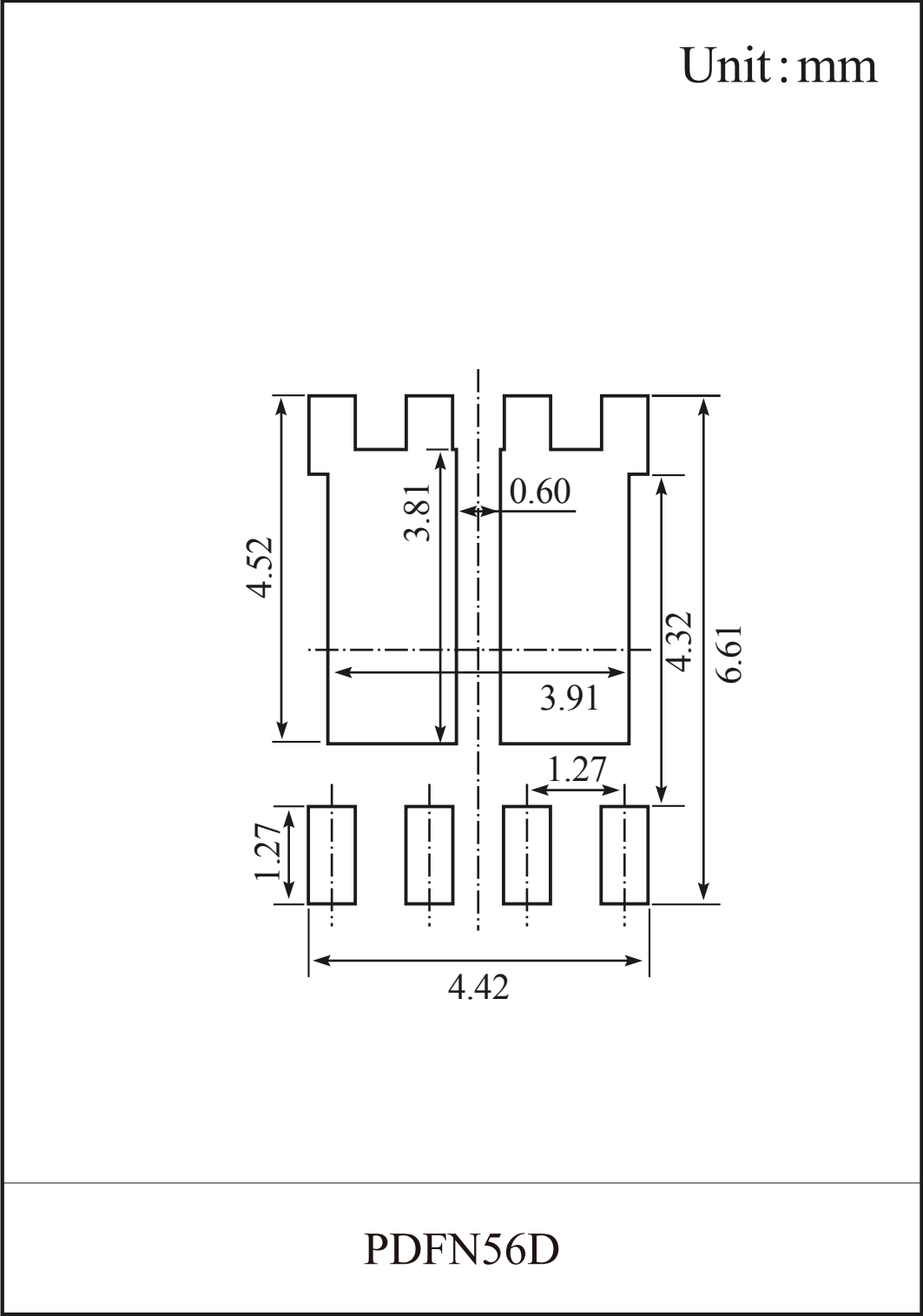


Fig 15. Recommended Pad Dimension

