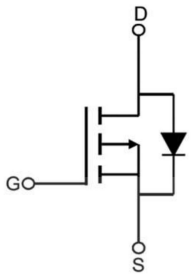
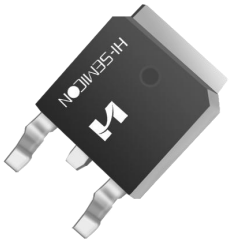
-15A, -40V P-CHANNEL MOSFET

GENERAL DESCRIPTION

The SFD4001PT5 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. Such as:PWM Applications,Power Management





TO-252-2L

FEATURES

- $R_{DS(on)}$=28.9mΩ(Typ)@V_{GS}=-10V，ID=-3A
- $R_{DS(on)}$=38.2mΩ(Typ)@V_{GS}=-4.5V，ID=-3A
- V_{DS}=-40V,I_D=-15A
- Advance Trench Technology
- Fast Switching and High Efficiency
- Lead Free and Green Devices Available:Rohs Compliant

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFD4001PT5	TO-252-2L	SFD4001PT5	Pb Free	Reel

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	T_C = 25°C	I_D	-15	A
	T_C = 100°C		-12	
Drain Current Pulsed(Note 1)		I_{DM}	-60	A
Power Dissipation(T_C=25°C)		P_D	3.5	W
Operation Junction Temperature Range		T_J	-55~+175	°C
Storage Temperature Range		T_{stg}	-55~+175	°C
Maximum lead temperature for soldering purposes,1/8" from case for 5 seconds		TL	300	℃

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	12	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=-250μA	40	44.1	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V	-	-9.1	-80	nA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	2.8	100	nA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=-20V, V_{DS}=0V	-	-1.2	-100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}= V_{DS}, I_D=-250μA	-1.3	-1.6	-2.1	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-3A	-	28.9	34	mΩ
		V_{GS}=-4.5V, I_D=-3A	-	38.2	47	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-20V V_{GS}=0V f=1.0MHZ	-	910	-	pF
Output Capacitance	C_{oss}		-	92	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-20V,V_{GS}=-10V R_G=3Ω ,I_D=5A (Note 2.3)	-	9	-	ns
Turn-on Rise Time	t_r		-	15	-	
Turn-off Delay Time	$t_{d(off)}$		-	46	-	
Turn-off Fall Time	t_f		-	70	-	
Total Gate Charge	Q_g	V_{DS}=-20V, I_D=-15A V_{GS}=-10V (Note 2.3)	-	12	-	nC
Gate-Source Charge	Q_{gs}		-	5.2	-	

Gate-Drain Charge	Q_{gd}	V_{DS}=-20V, I_D=-15A V_{GS}=-10V (Note 2.3)	-	4.5	-	nC

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	-	-	-15	A
Pulsed Source Current	I_{SM}		-	-	-60	
Diode Forward Voltage	V_{SD}	I_S=-5A,V_{GS}=0V	-	-0.8	-1.3	V

Notes:

1.Pluse width limited by maximum junction temperature

2.Pulse Test: Pulse width ≤300μs, Duty cycle≤2%

3.Essentially independent of operating temperature

Typical Performance Characteristics

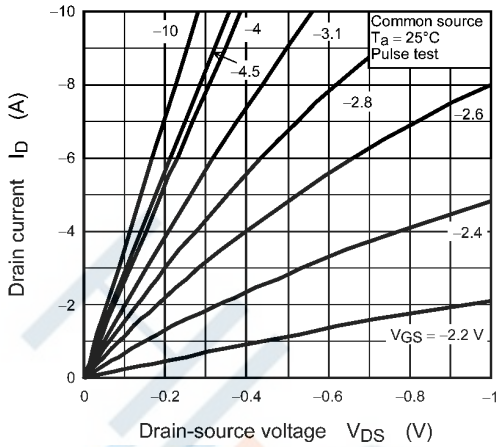


Figure.1 ID - VDS

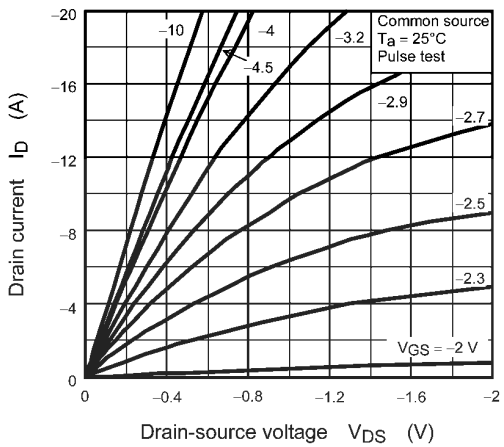


Figure.2 ID - VDS

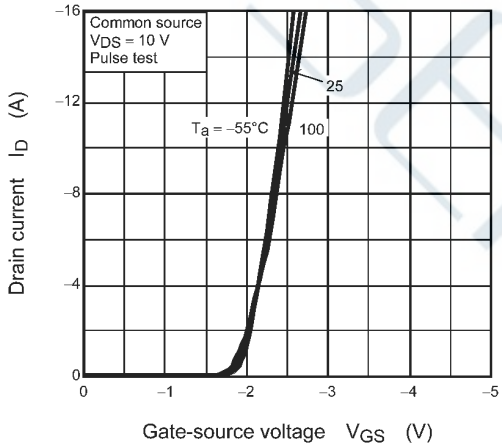


Figure.3 VDS-VGS

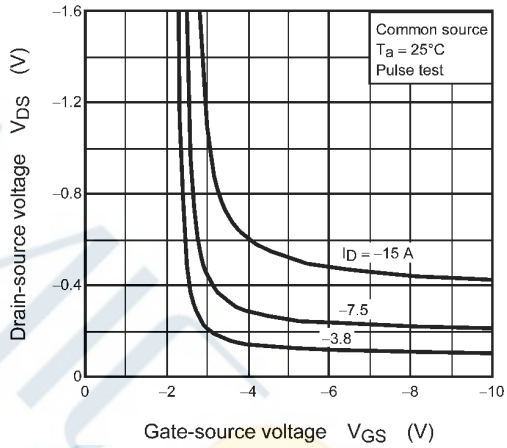


Figure.4 VDS-VGS

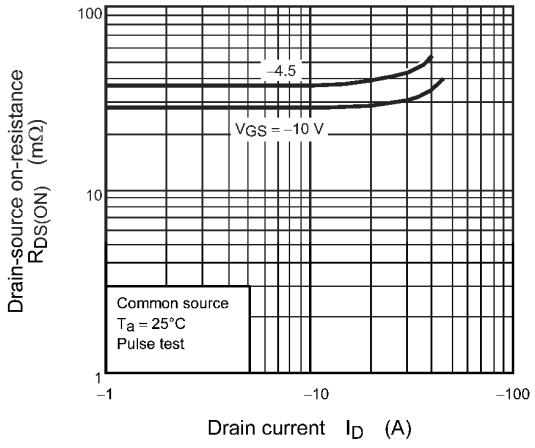


Figure.5 RDS(ON) - ID

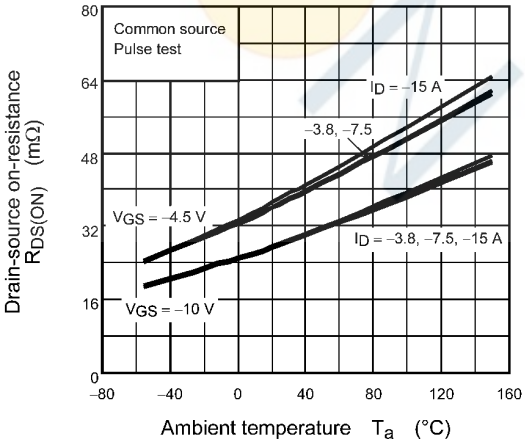


Figure.6 RDS(ON) - Ta

Typical Performance Characteristics

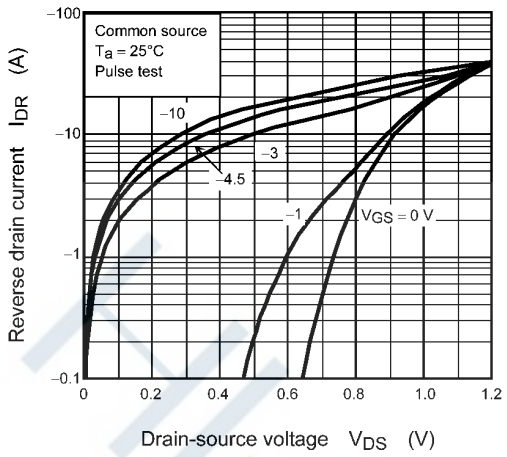


Figure.7 IDR - VDS

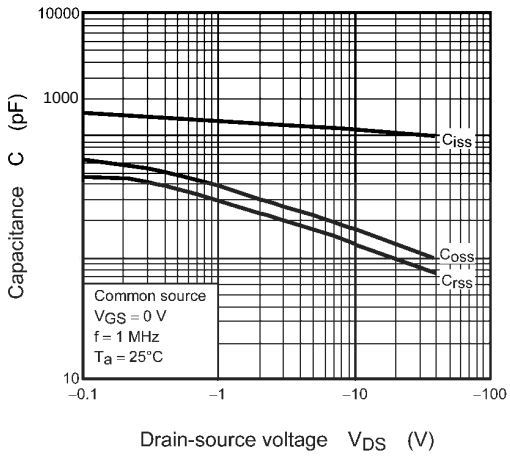


Figure.8 Capacitance - VDS

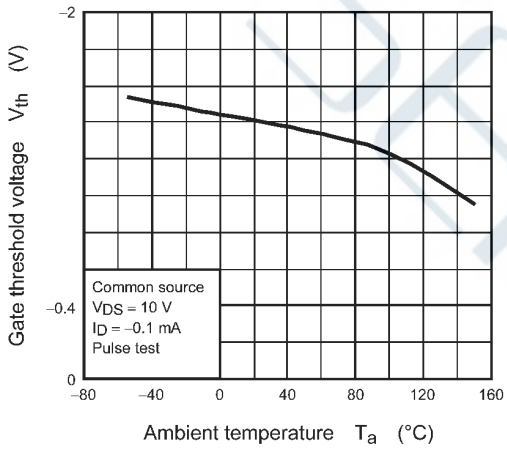


Figure.9 Vth - Ta

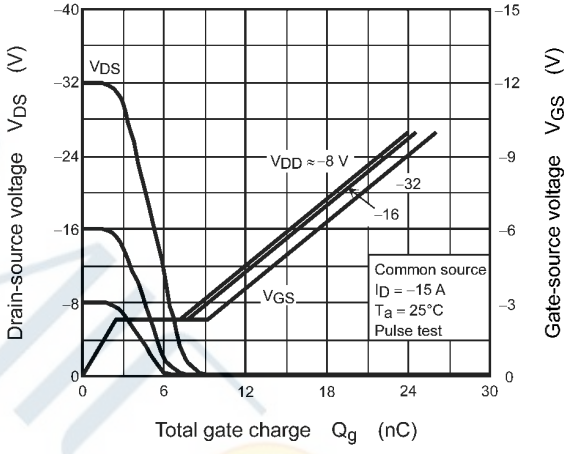


Figure.10 Dynamic Input/Out Characteristics

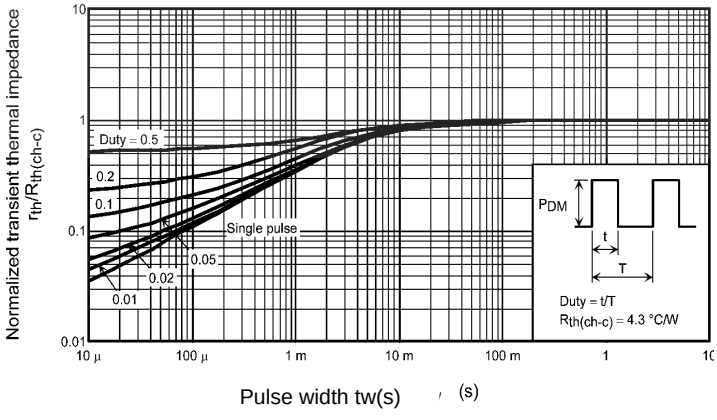


Figure.11 Zth(ch-c) - tw

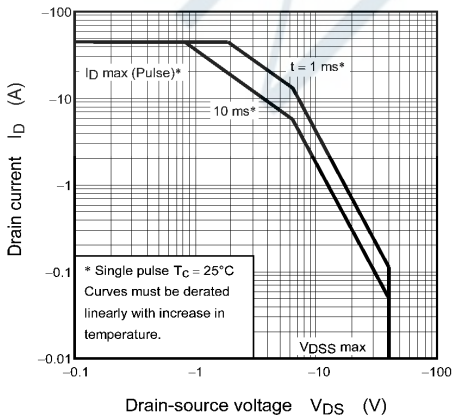
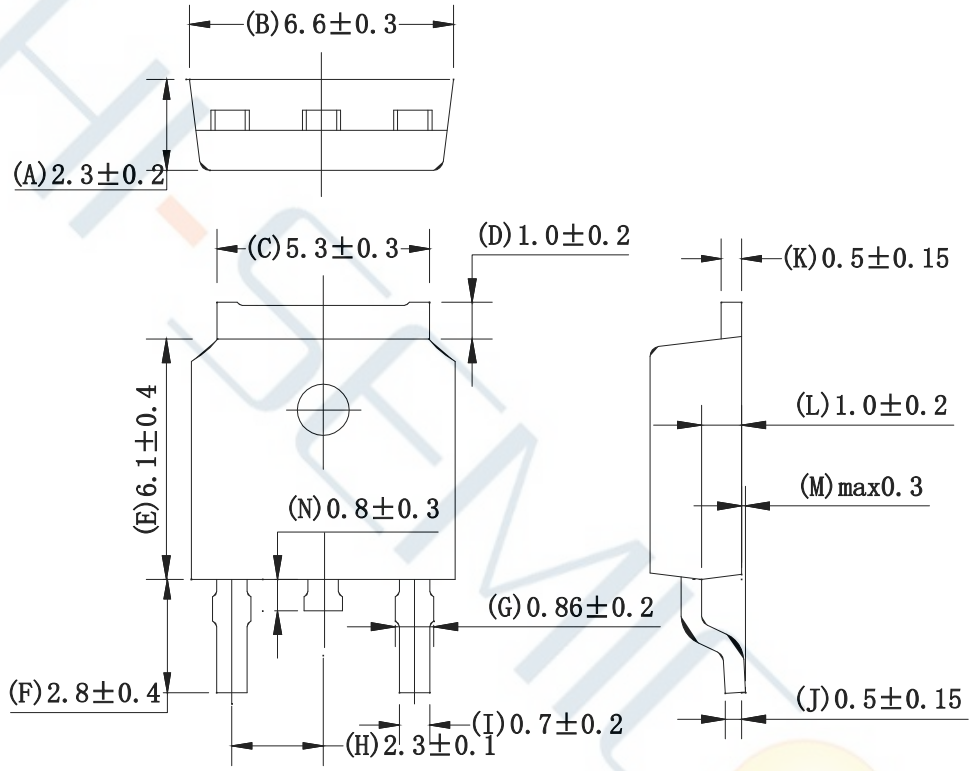


Figure.12 Safe Operating Area

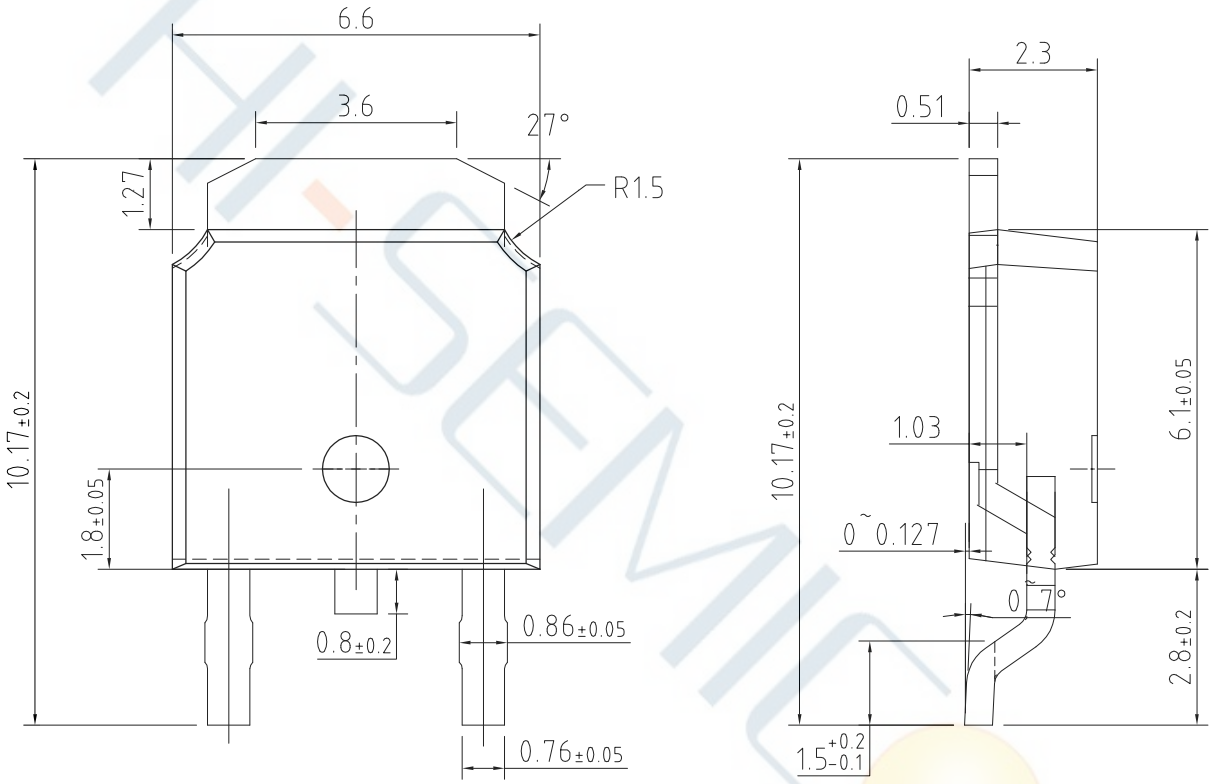
Package Dimensions of TO-252-2L

Unit:mm



Package Dimensions of TO-252-2L

Unit:mm



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