

Description

The FDV304P uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.

General Features

- $V_{DS} = -20V$, $I_D = -4A$

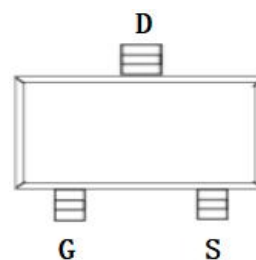
$$R_{DS(ON)} < 40\text{ m}\Omega @ V_{GS} = -4.5V$$

$$R_{DS(ON)} < 50\text{ m}\Omega @ V_{GS} = -2.5V$$

- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package
- ESD Rating: >2000V HBM

Application

- PWM applications
- Load switch
- Power management



Marking and pin assignment



SOT-23



Schematic diagram

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous	I_D	-4	A
Pulsed Drain Current(Note 1)	I_{DM}	-12	A
Maximum Power Dissipation	P_D	0.72	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	$t \leq 5\text{ s}$	$R_{\theta JA}$	100	130	C/ W
Maximum Junction-to-Foot (Drain)	Steady State	$R_{\theta JF}$	60	75	

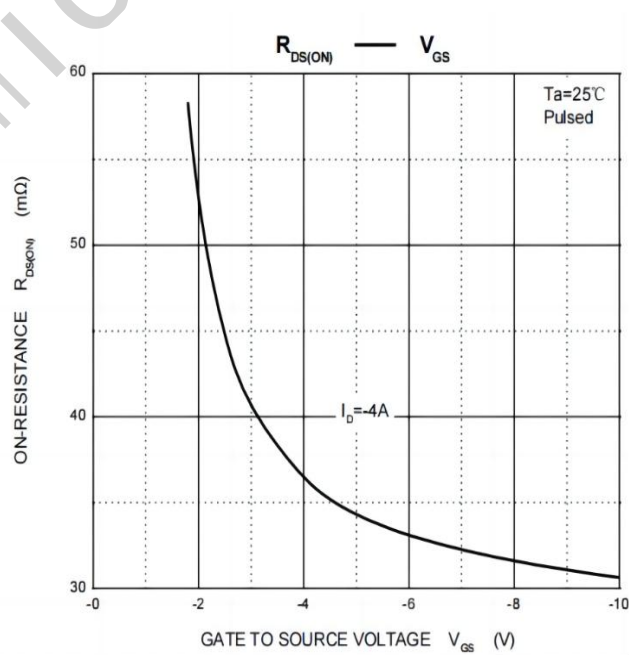
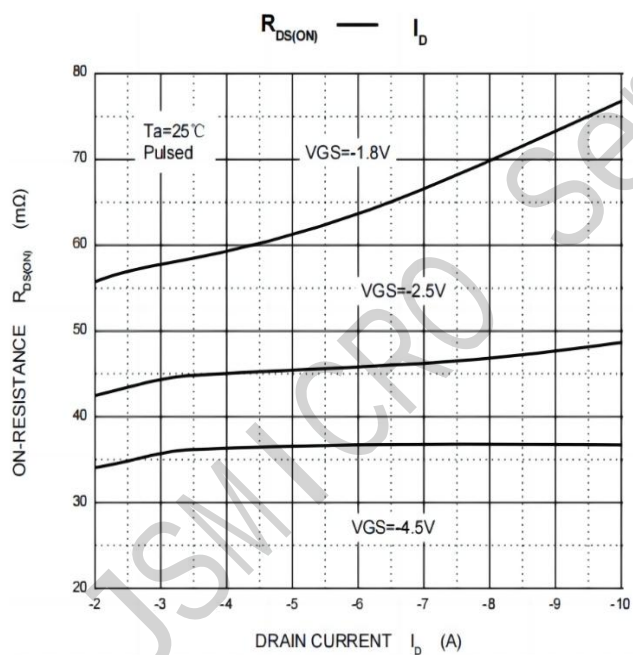
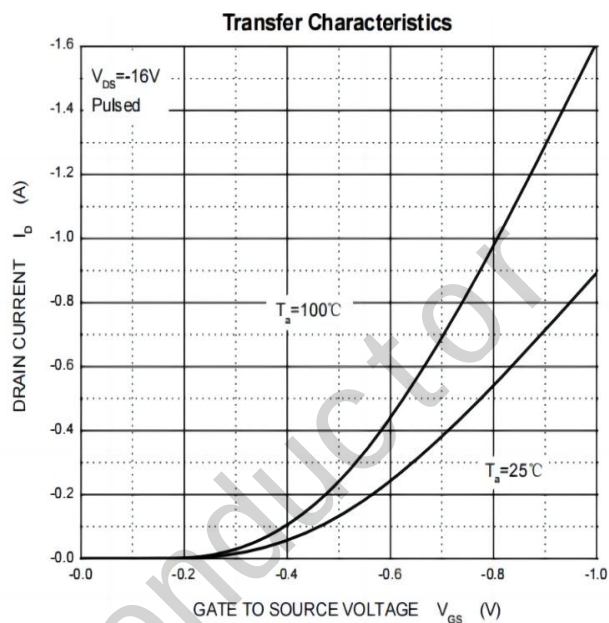
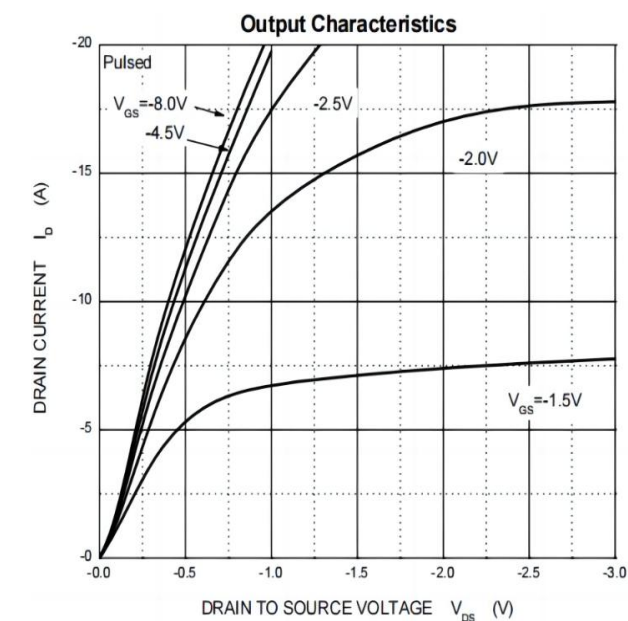
Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain- source breakdown voltage	BVDSS	VGS=0V, ID =-250μA	-20	-	-	V
Zero gate voltage drain current	IDSS	VDS=-20V, VGS=0V	-	-	- 1	μA
Gate- body leakage	IGSS	VDS=0V, VGS=±8V	-	-	± 10	μA
ON Characteristics						
Gate threshold voltage	VGS(th)	VDS=VGS , ID =-250μA	-0.4	-	- 1.0	V
Drain- source on- state resistance a	RDS(ON)	VGS=-4 .5V, ID=-4A	-	29	35	mΩ
		VGS=-2 .5V, ID=-3A	-	45	50	
Forward transconductance a	gfs	VDS=-5V, ID=-4A	8	-	-	S
Dynamic Characteristics b						
Input capacitance	C _{ISS}	VDS=- 10V ,VGS=0V f=1.0MHz	-	289	-	pF
Output capacitance	C _{OSS}		-	98	-	
Reverse transfer capacitance	C _{RSS}		-	22	-	
Switching Characteristics						
Turn-on delay time	tD(ON)	VDD=- 10V ID=-4A VGEN=-4 .5V RL=10ohm RGEN=-60ohm	-	12	-	ns
Rise time	tr		-	35	-	
Turn-off delay time	tD(OFF)		-	30	-	
Fall time	tf		-	10	-	
Total gate charge	Qg	VDS=- 10V,ID=-4A VGS=-4 .5V	-	9.1	-	nC
Gate- source charge	Qgs		-	1	-	
Gate- drain charge	Qgd		-	2.6	-	
DRAIN- SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	VSD	VGS=0V,Is=- 1.25A	-	-0.81	- 1.2	V

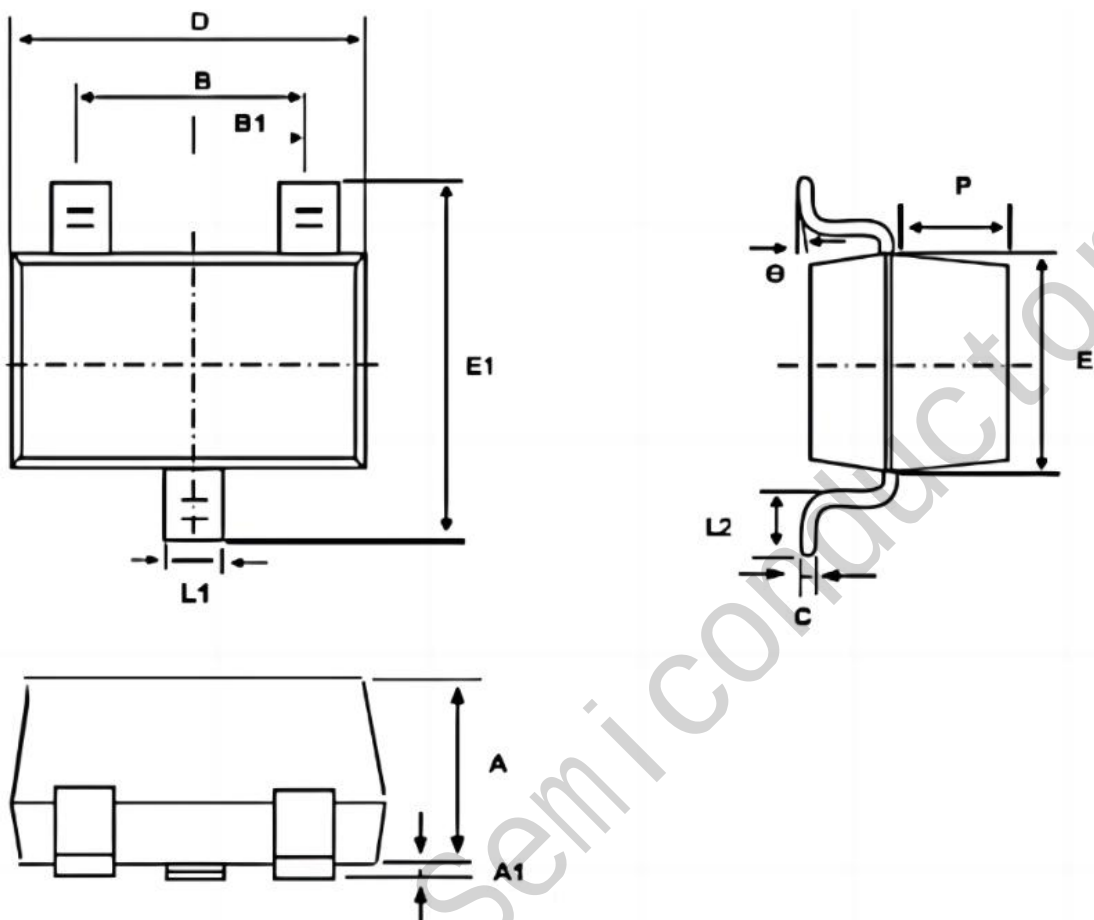
Notes:

- a. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2 %
b. Guaranteed by design, not subject to production testing

Typical Electrical and Thermal Characteristics



SOT-23 Package Information



Symbol	Dim in mm		
	Min	Nor	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950TPY.		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600