

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



ESD



TVS



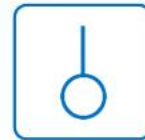
MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

▶ Domestic	Part Number	IPD50P03P4L-11
▶ Overseas	Part Number	IPD50P03P4L-11
▶ Equivalent	Part Number	IPD50P03P4L-11

EV is the abbreviation of name EVVO

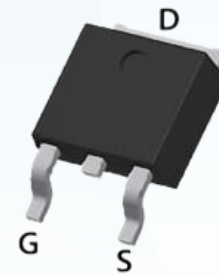
V <sub>DSS</sub> (V)	R <sub>DS</sub> (ON)	I <sub>D</sub> (A)
-30	8.2mΩ(Typ)@V <sub>GS</sub> =-10V	-60
	17mΩ(Typ)@V <sub>GS</sub> =-4.5V	

## FEATURE:

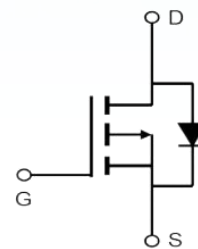
- The IPD50P03P4L-11 is the high cell density trench P-ch MOSFETS, which provides excellent R<sub>DS(on)</sub> and efficiency for most of the small power switching and load switch applications.

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

## Pin Description



TO-252



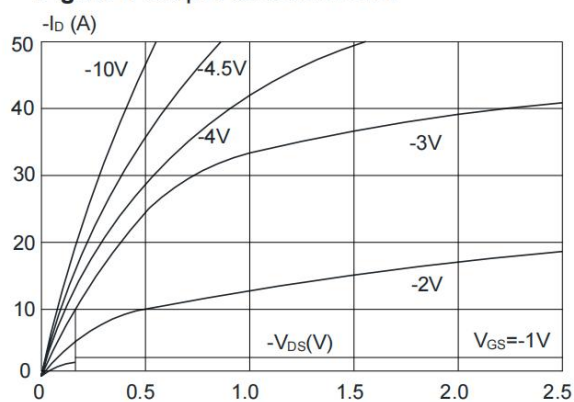
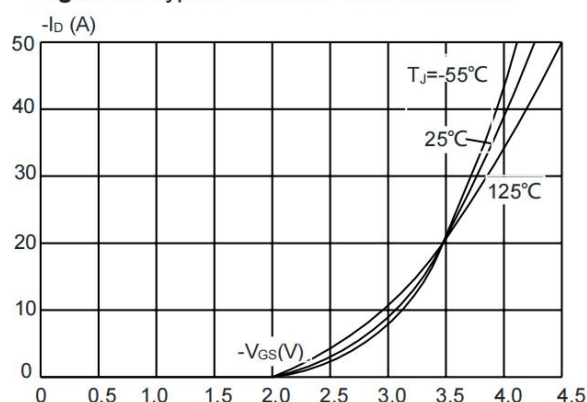
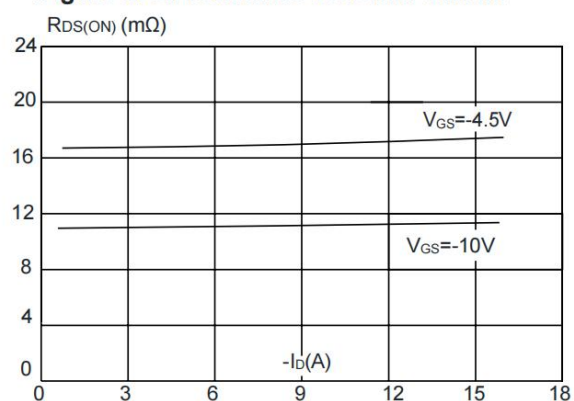
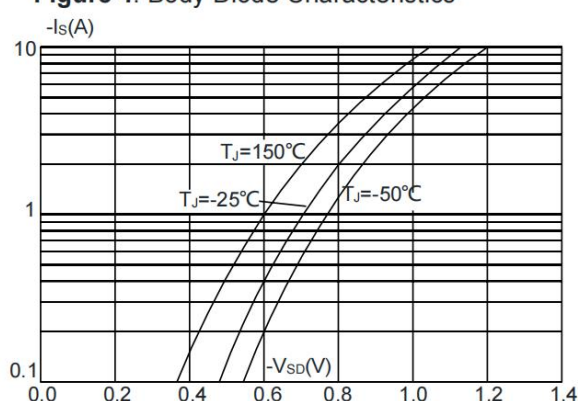
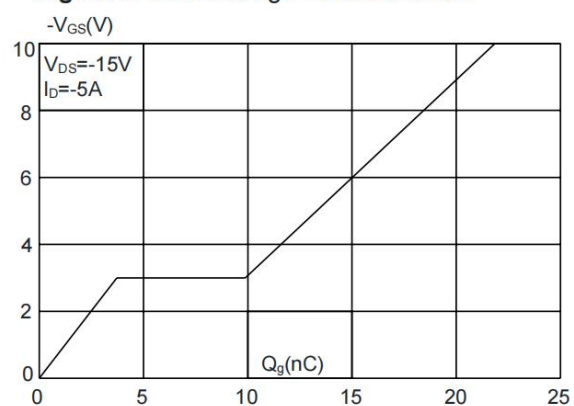
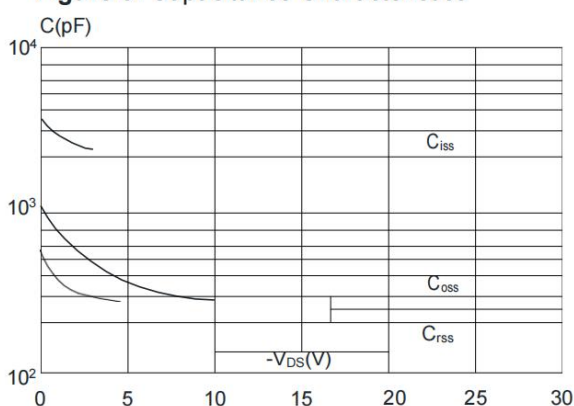
## Absolute Maximum Ratings

Symbol	Parameter		Rating	Units
V <sub>DSS</sub>	Drain-Source Voltage		-30	V
V <sub>GSS</sub>	Gate-Source Voltage		±20	V
I <sub>D</sub>	Continuous Drain Current(V <sub>GS</sub> = -4.5V)	T <sub>C</sub> =25°C	-60	A
		T <sub>C</sub> =70°C	-32	
T <sub>J</sub>	Maximum Junction Temperature		150	°C
T <sub>STG</sub>	Storage Temperature Range		-55 to 150	°C
I <sub>DM</sub>	Pulsed Drain Current		-150	A
P <sub>D</sub>	Maximum Power Dissipation	T <sub>C</sub> =25°C	45	W
		T <sub>C</sub> =70°C	---	
E <sub>AS</sub>	Avalanche Energy, Single Pulsed		125	mJ
R <sub>θJC</sub>	Thermal Resistance-Junction to Case		---	°C/W
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient		62	°C/W

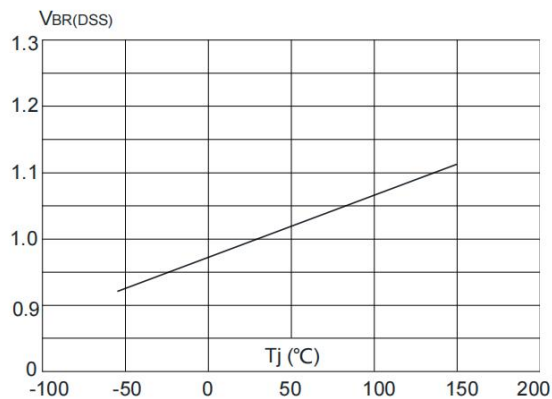
Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250uA	-30	---	---	V
VGS(th)	Gate threshold voltage	VDS=VGS,ID=250uA	-1.0	-1.6	-2.5	V
RDS(ON)	Drain-Source On-state Resistance	VGS=-10V , ID=-10A	---	8.2	14	mΩ
		VGS=-4.5V , ID=-5A	---	17	24	mΩ
IGSS	Gate-source leakage current	VGS=±20V , VDS=0V	---	---	±100	nA
IDSS	Zero gate voltage drain current	VDS=-30V,VGS=0V,TJ=25℃	---	---	-1	μA
		TJ=55℃	---	---	---	
Dynamic Characteristic						
Ciss	Input Capacitance	VGS=0V, VDS=-15V, Frequency=1.0MHz	---	1770	---	pF
Coss	Output Capacitance		---	233	---	
Crss	Reverse Transfer Capacitance		---	206	---	
QG	Gate Total Charge	VDS=-15V, VGS=-10V, IDS=-5A	---	22	---	nC
Qgs	Gate-Source charge		---	1.0	---	
Qgd	Gate-Drain charge		---	1.8	---	
td(on)	Turn-on delay time	VDD=-15V , VGS=-10V , RG=2.5Ω, ID=-10A	---	9	---	ns
tr	Turn-on Rise Time		---	13	---	
td(off)	Turn-off Delay Time		---	48	---	
tf	Turn-off Fall Time		---	20	---	
RG	Gate Resistance	VGS=0V,VDS=0V,F=1MHz	---	9	---	Ω
Diode Characteristics						
VSD	Diode Forward Voltage	VGS=0V , IS=1A , TJ=25℃	---	---	-1.2	V
Is	Maximum Continuous Drain to Source Diode Forward Current		---	---	-15	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		---	---	-60	A
trr	Reverse Recovery Time	ISD=-2.8A, dISD/dt=-100A/μs	---	64	---	ns
Qrr	Reverse Recovery Charge		---	25	---	nC

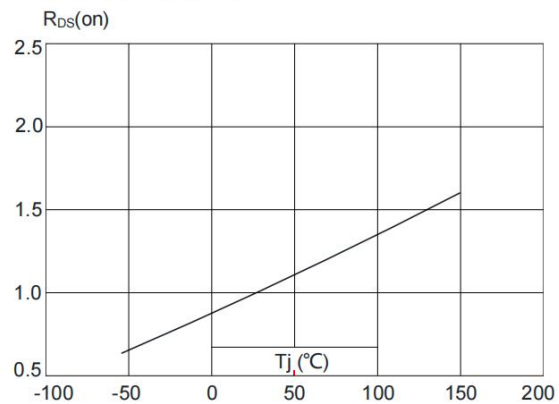
## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

**Figure 1: Output Characteristics**

**Figure 2: Typical Transfer Characteristics**

**Figure 3: On-resistance vs. Drain Current**

**Figure 4: Body Diode Characteristics**

**Figure 5: Gate Charge Characteristics**

**Figure 6: Capacitance Characteristics**


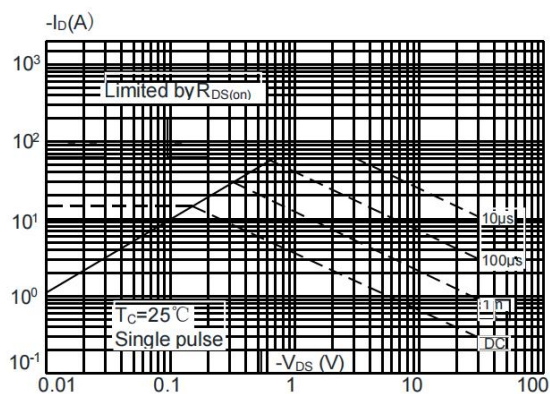
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



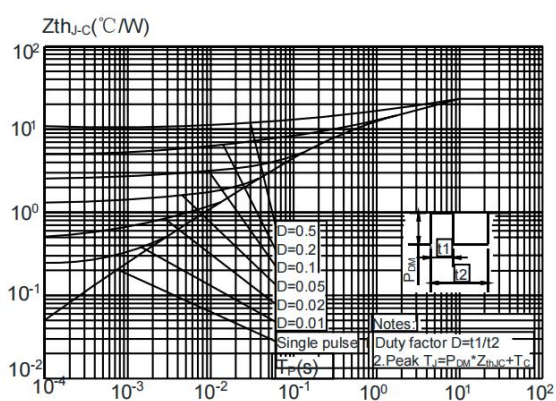
**Figure 8:** Normalized on Resistance vs. Junction Temperature



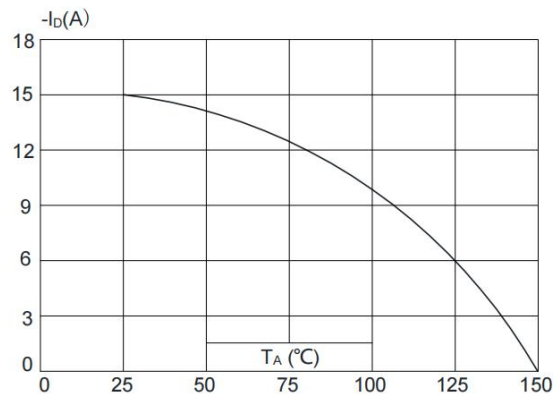
**Figure 9:** Maximum Safe Operating Area



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

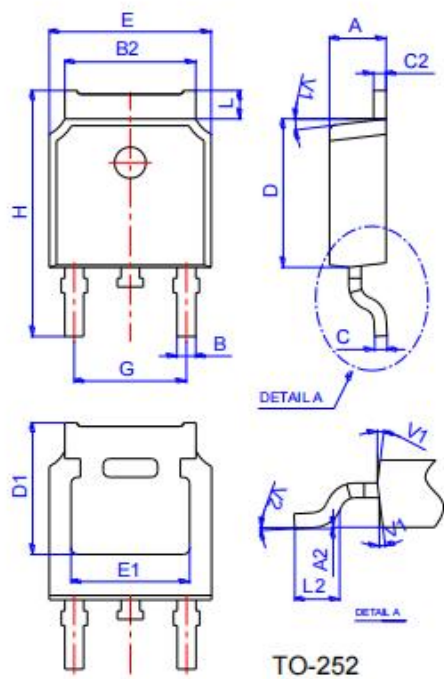


**Figure 10:** Maximum Continuous Drain Current vs. Ambient Temperature



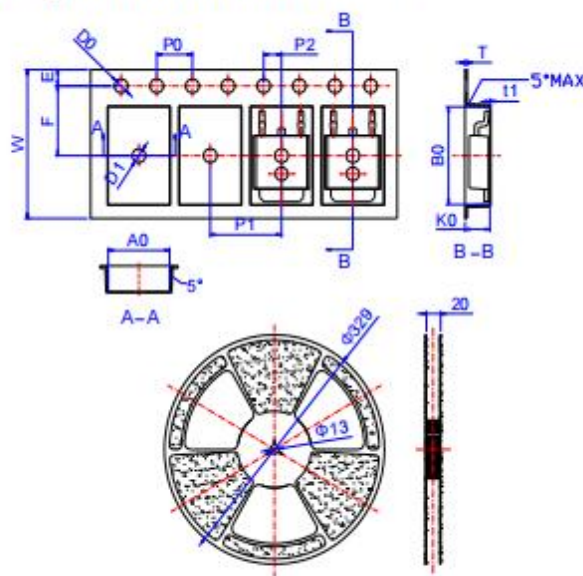


Package Mechanical Data:TO-252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

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