

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

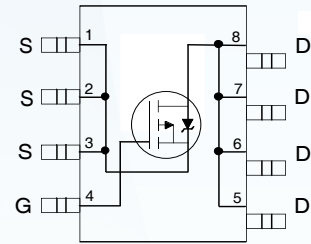
▶ Domestic	Part Number	IRF7204
▶ Overseas	Part Number	IRF7204
▶ Equivalent	Part Number	IRF7204

EV is the abbreviation of name EVVO

-30V P-Channel Enhancement Mode MOSFET

General Description:

The IRF7204 is the single P-Channel logic enhancement mode power field effect transistors to provide excellent $R_{DS(on)}$, low gate charge and low gate resistance. It's up to -30V operation voltage is well suited in switching mode power supply, SMPS, notebook computer power management and other battery powered circuits.



Top View

Features:

- $R_{DS(ON)} < 55m @ V_{GS} = 10V$
- $R_{DS(ON)} < 90m @ V_{GS} = 4.5V$
- Super high density cell design for extremely low
- $R_{DS(ON)}$ Exceptional on-resistance and maximum DC current

Applications:

- Switching power supply, SMPS
- Battery Powered System
- DC/DC Converter
- DC/AC Converter
- Load Switch

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-5.1	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Maximum Power Dissipation	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	50	$^\circ C/W$
--	-----------------	----	--------------

-30V P-Channel Enhancement Mode MOSFET
Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-30	-33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.8	-1.2	-2.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-5.1A	-	43	55	mΩ
		V _{GS} =-4.5V, I _D =-4.2A	-	62	90	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-15V, I _D =-4.5A	4	7	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1.0MHz	-	520	-	PF
Output Capacitance	C _{oss}		-	130	-	PF
Reverse Transfer Capacitance	C _{rss}		-	70	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V, R _{GEN} =6Ω	-	7	-	nS
Turn-on Rise Time	t _r		-	13	-	nS
Turn-Off Delay Time	t _{d(off)}		-	14	-	nS
Turn-Off Fall Time	t _f		-	9	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-5.1A, V _{GS} =-10V	-	11	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	nC
Gate-Drain Charge	Q _{gd}		-	3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =-5.1A	-	-	-1.2	V

-30V P-Channel Enhancement Mode MOSFET

Typical Electrical and Thermal Characteristics

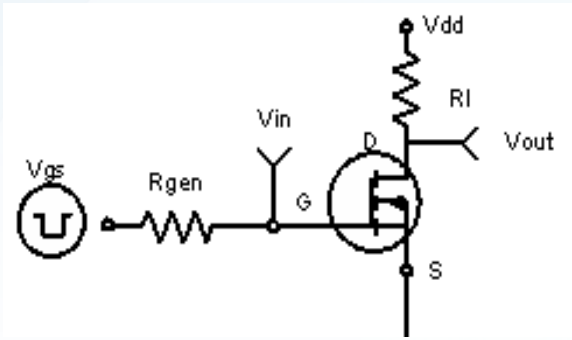


Figure 1: Switching Test Circuit

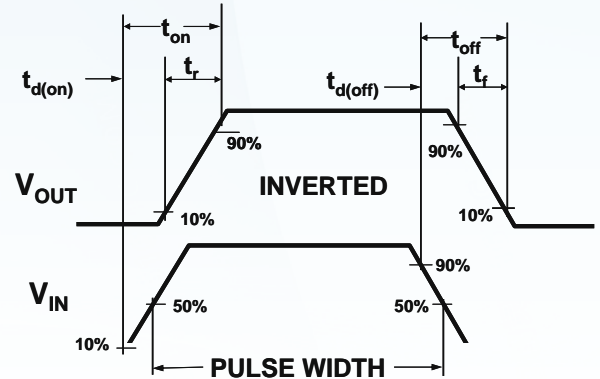
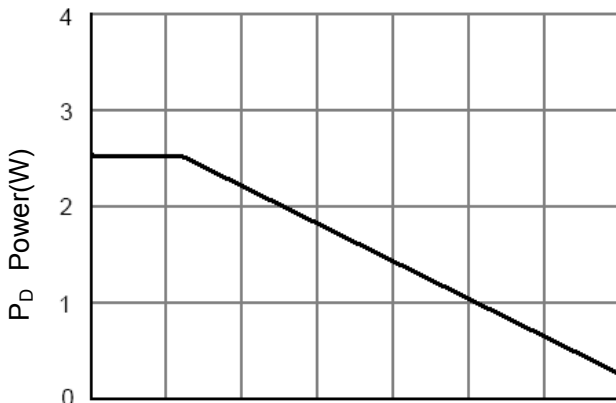
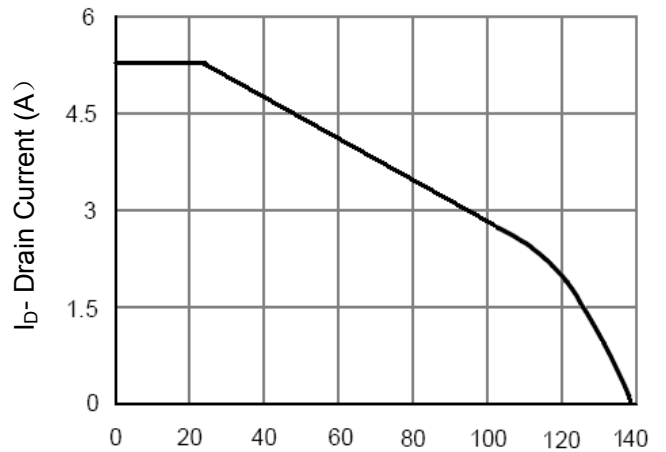


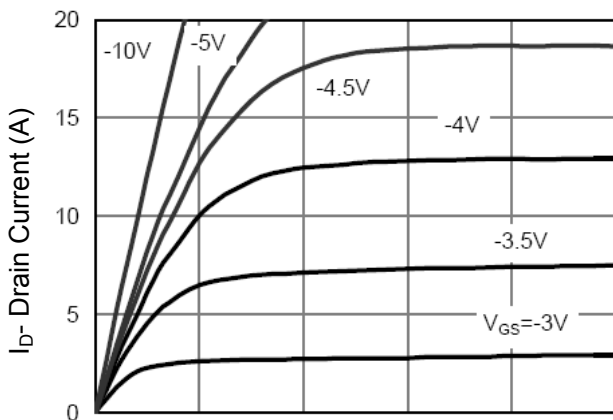
Figure 2: Switching Waveforms



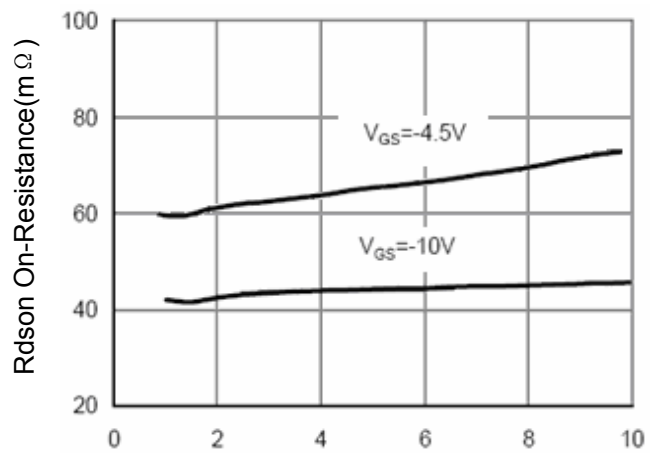
T_J-Junction Temperature (°C)
Figure 3 Power Dissipation



T_J-Junction Temperature (°C)
Figure 4 Drain Current



V_{ds} Drain-Source Voltage (V)
Figure 5 Output Characteristics



I_D- Drain Current (A)
Figure 6 Drain-Source On-Resistance

-30V P-Channel Enhancement Mode MOSFET

Figure 5 Output Characteristics

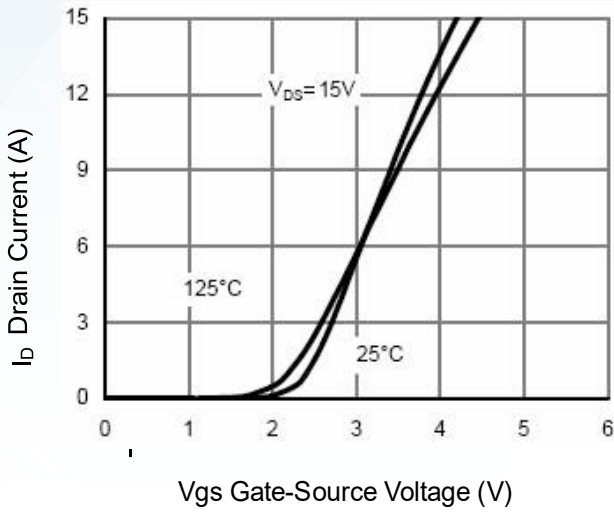


Figure 7 Transfer Characteristics

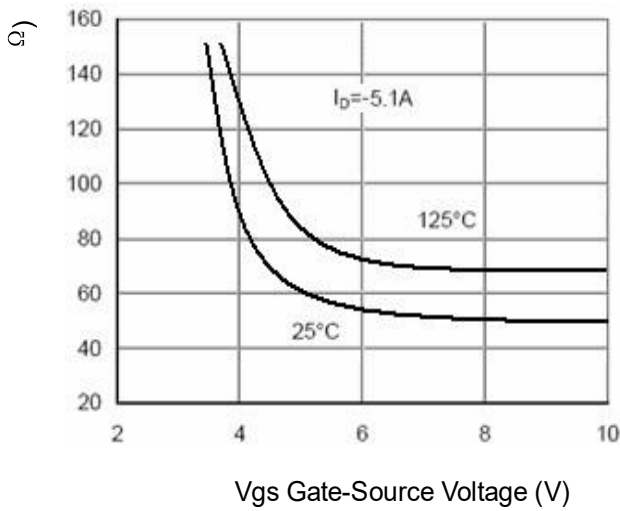


Figure 9 Rds(on) vs Vgs

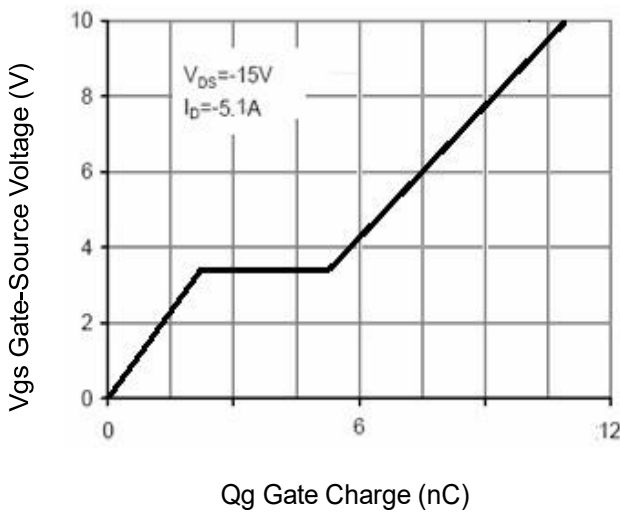


Figure 11 Gate Charge

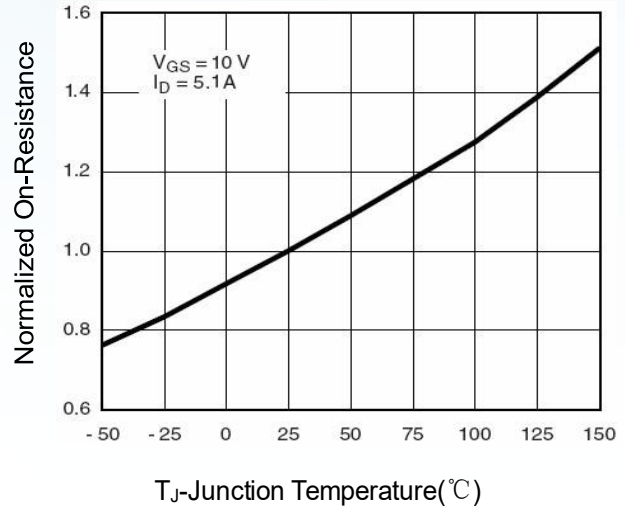


Figure 10 Capacitance vs Vds

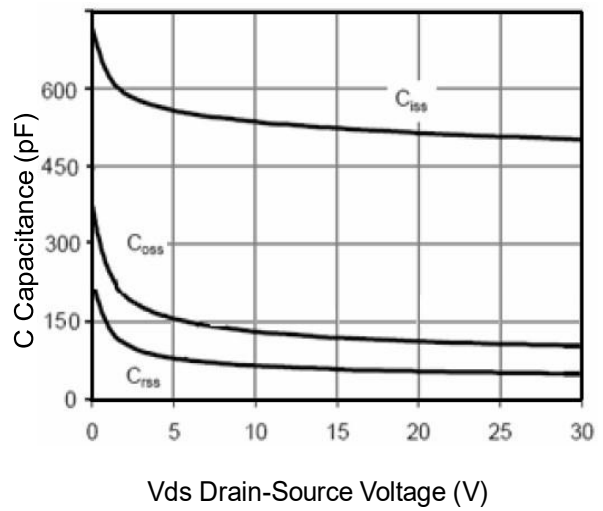
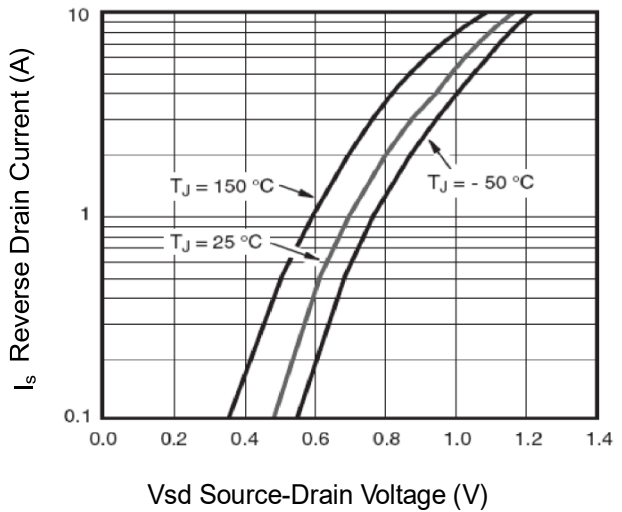


Figure 12 Source- Drain Diode Forward



-30V P-Channel Enhancement Mode MOSFET

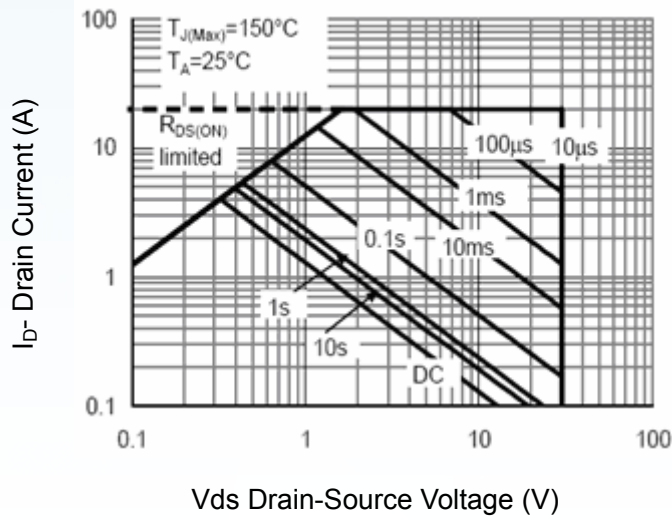


Figure 13 Safe Operation Area

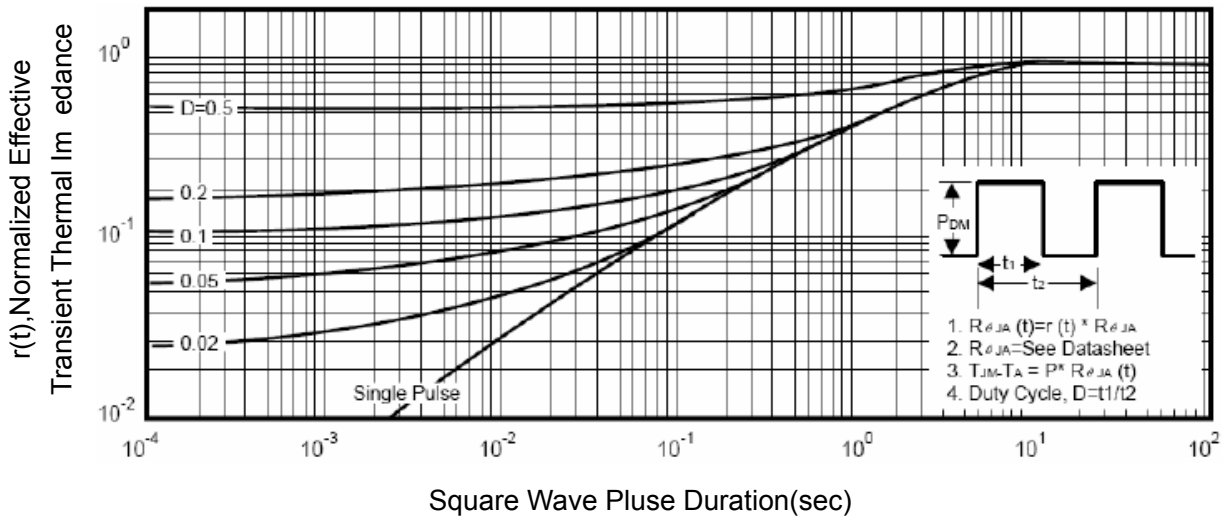
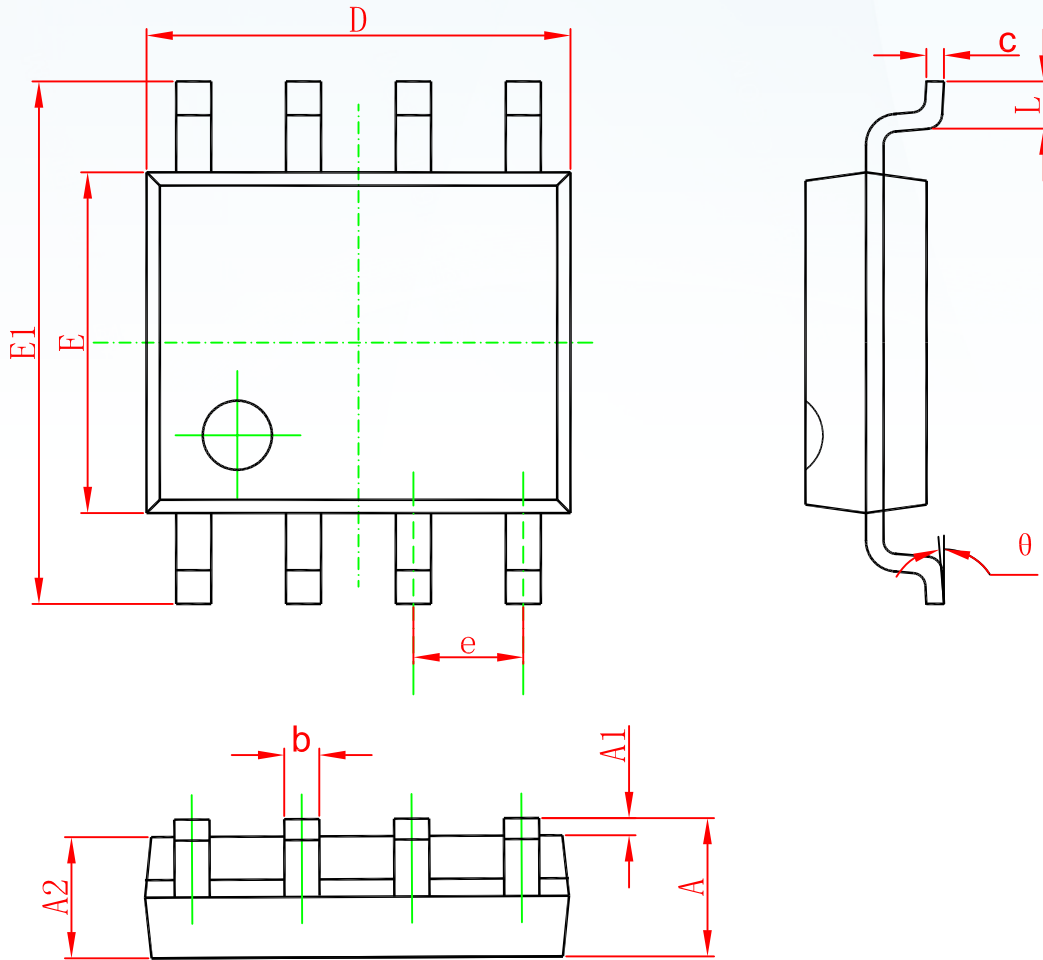


Figure 14 Normalized Maximum Transient Thermal Impedance

-30V P-Channel Enhancement Mode MOSFET

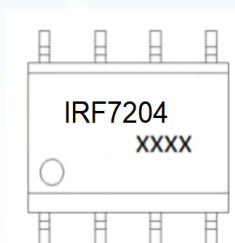
SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

-30V P-Channel Enhancement Mode MOSFET

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
IRF7204	SOP-8	3000	Tape and reel

Disclaimer

EVVOSEMI ("EVVO") reserves the right to make corrections, enhancements, improvements, and other changes to its products and services at any time, and to discontinue any product or service without notice.

EVVO warrants the performance of its hardware products to the specifications applicable at the time of sale in accordance with its standard warranty. Testing and other quality control techniques are used as deemed necessary by EVVO to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

Customers should obtain and confirm the latest product information and specifications before final design, purchase, or use. EVVO makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does EVVO assume any liability for application assistance or customer product design. EVVO does not warrant or accept any liability for products that are purchased or used for any unintended or unauthorized application.

EVVO products are not authorized for use as critical components in life support devices or systems without the express written approval of EVVOSEMI.

The EVVO logo and EVVOSEMI are trademarks of EVVOSEMI or its subsidiaries in relevant jurisdictions. EVVO reserves the right to make changes without further notice to any products herein.