

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

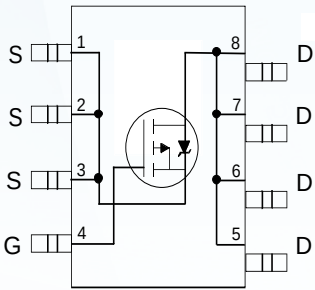
▶ Domestic	Part Number	IRF7240
▶ Overseas	Part Number	IRF7240
▶ Equivalent	Part Number	IRF7240

EV is the abbreviation of name EVVO

P-Channel MOSFET

Features

- $V_{DS} (V) = -40V$
- $I_D = -10.5 A$
- $R_{DS(ON)} < 16m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 27m\Omega$ ($V_{GS} = -4.5V$)
- Ultra Low On-Resistance
- Surface Mount
- Lead-Free



SOP-8

Description

The SOP-8 has been modified through a customized leadframe for enhanced thermal characteristics and multiple-die capability making it ideal in a variety of power applications. With these improvements, multiple devices can be used in an application with dramatically reduced board space. The package is designed for vapor phase, infrared, or wave soldering techniques.

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-40	V
$I_D @ T_A = 25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-10.5	A
$I_D @ T_A = 70^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-8.6	
I_{DM}	Pulsed Drain Current ①	-43	
$P_D @ T_A = 25^{\circ}C$	Power Dissipation ③	2.5	W
$P_D @ T_A = 70^{\circ}C$	Power Dissipation③	1.6	
	Linear Derating Factor	20	mW/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

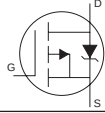
	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient③	50	°C/W

P-Channel MOSFET

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-40			V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient		-0.025		V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance			16	$m\Omega$	$V_{GS} = -10V, I_D = -10.5A$ ②
				27		$V_{GS} = -4.5V, I_D = -8.4A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	-1.0		-3.0	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	17			S	$V_{DS} = -10V, I_D = -10.5A$
I_{DSS}	Drain-to-Source Leakage Current			-15	μA	$V_{DS} = -32V, V_{GS} = 0V$
				-25		$V_{DS} = -32V, V_{GS} = 0V, T_J = 70^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			-100	nA	$V_{GS} = -20V$
	Gate-to-Source Reverse Leakage			100		$V_{GS} = 20V$
Q_g	Total Gate Charge		73	110	nC	$I_D = -10.5A$
Q_{gs}	Gate-to-Source Charge		31	47		$V_{DS} = -20V$
Q_{gd}	Gate-to-Drain ("Miller") Charge		17	26		$V_{GS} = -10V$
$t_{d(on)}$	Turn-On Delay Time		52		ns	$V_{DD} = -20V$ ②
t_r	Rise Time		490			$I_D = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time		210			$R_G = 6.0\Omega$
t_f	Fall Time		97			$V_{GS} = -10V$
C_{iss}	Input Capacitance		9250		pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance		580			$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance		520			$f = 1.0kHz$

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)			-2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①			-43		
V_{SD}	Diode Forward Voltage			-1.2	V	$T_J = 25^\circ\text{C}, I_S = -2.5A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time		43	65	ns	$T_J = 25^\circ\text{C}, I_F = -2.5A$
Q_{rr}	Reverse Recovery Charge		75	110	nC	$di/dt = -100A/\mu s$ ②

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.
- ③ Surface mounted on 1 in square Cu board, $t \leq 5\text{sec}$.

P-Channel MOSFET

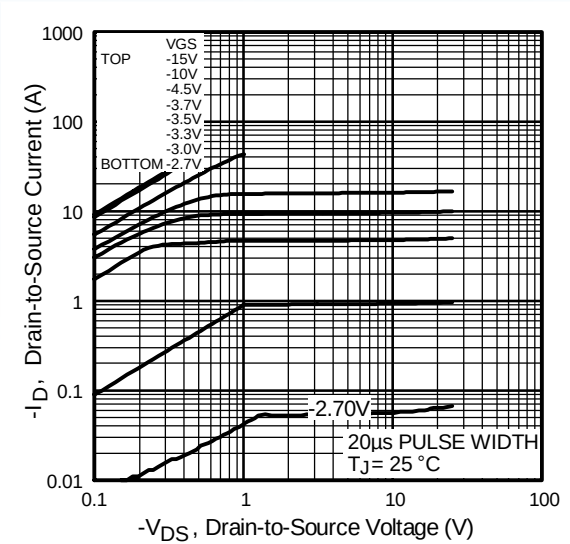


Fig 1. Typical Output Characteristics

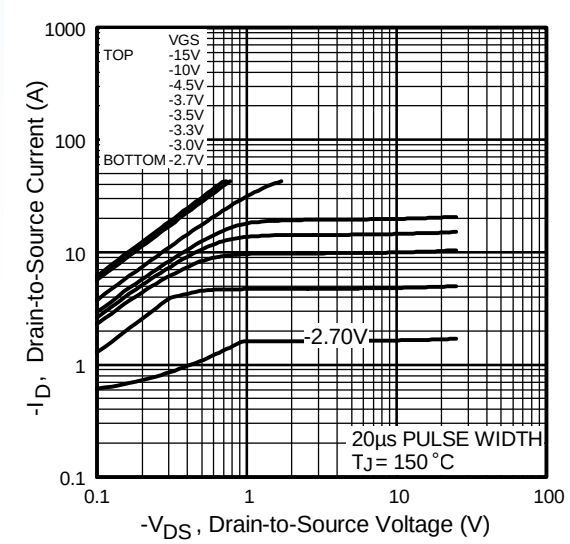


Fig 2. Typical Output Characteristics

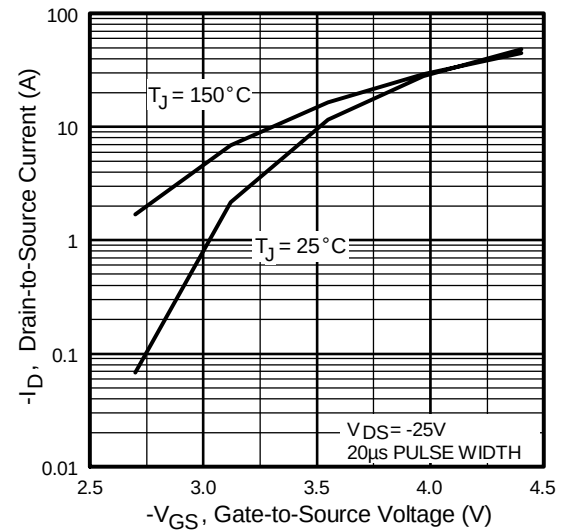


Fig 3. Typical Transfer Characteristics

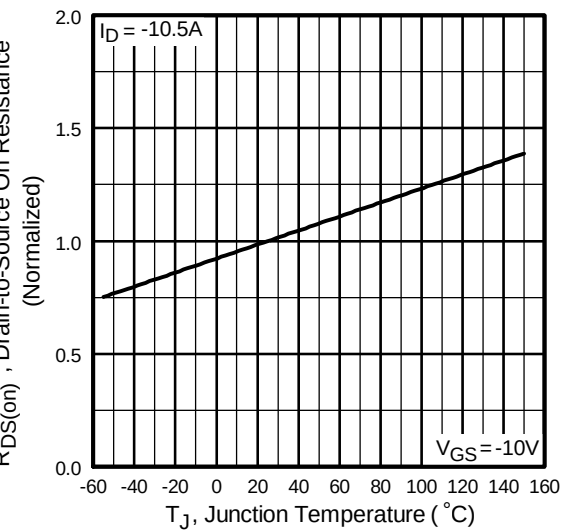


Fig 4. Normalized On-Resistance Vs. Temperature

P-Channel MOSFET

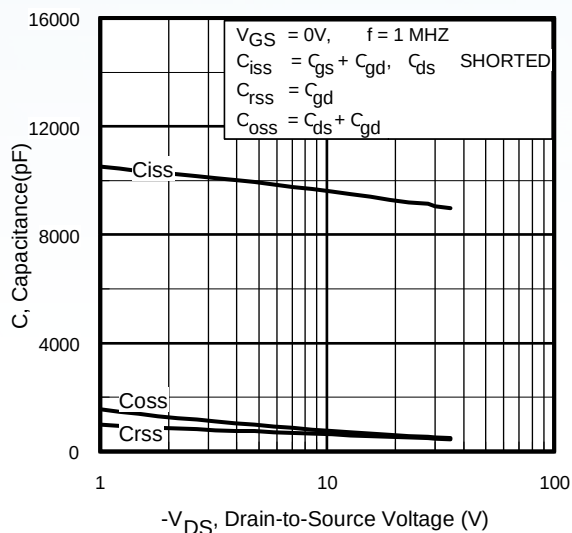


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

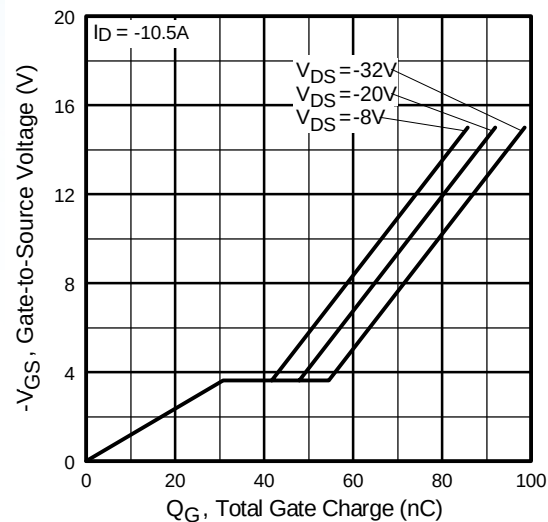


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

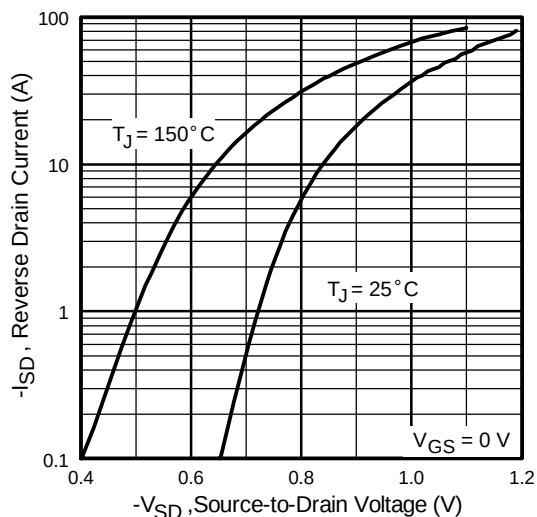


Fig 7. Typical Source-Drain Diode Forward Voltage

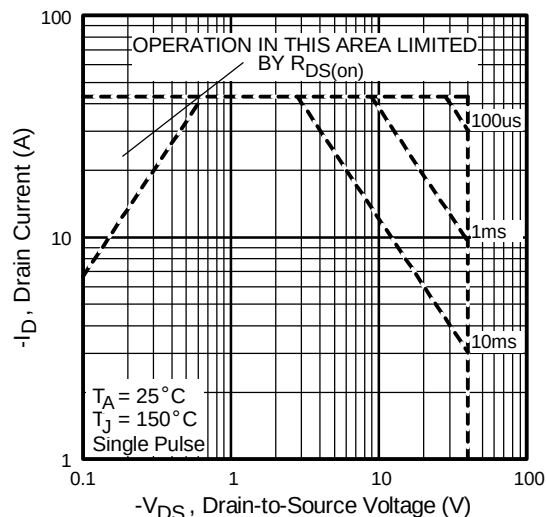


Fig 8. Maximum Safe Operating Area

P-Channel MOSFET

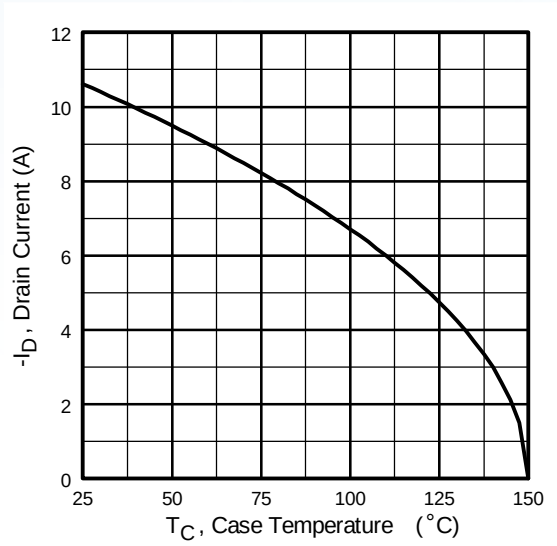


Fig 9. Maximum Drain Current Vs. Case Temperature

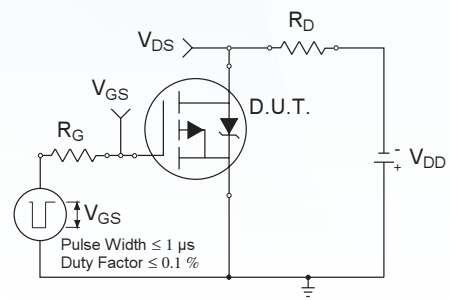


Fig 10a. Switching Time Test Circuit

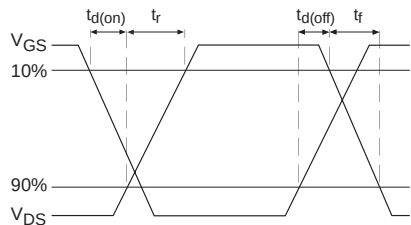


Fig 10b. Switching Time Waveforms

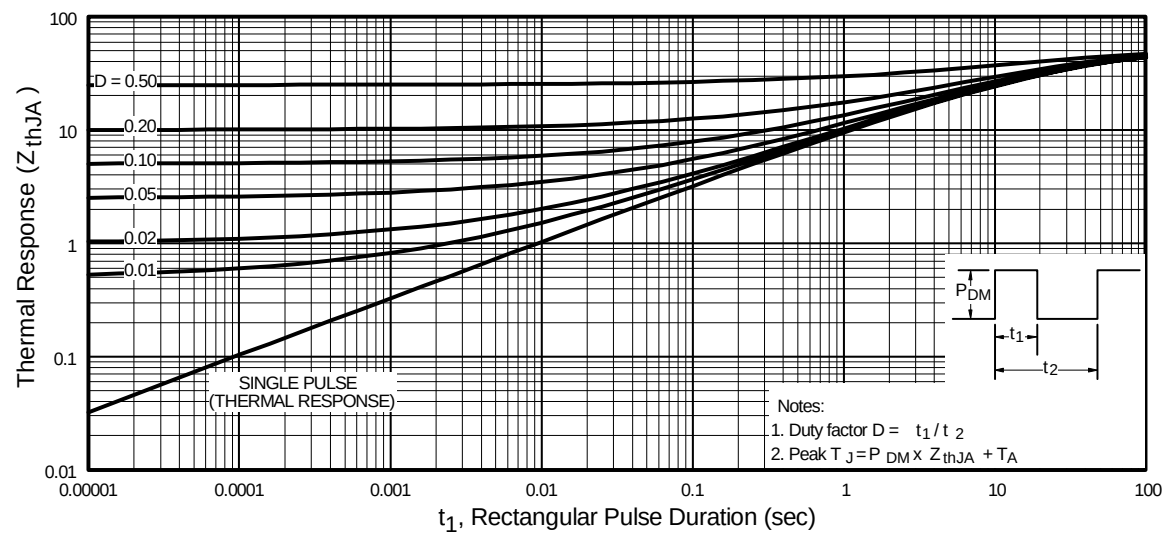


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

P-Channel MOSFET

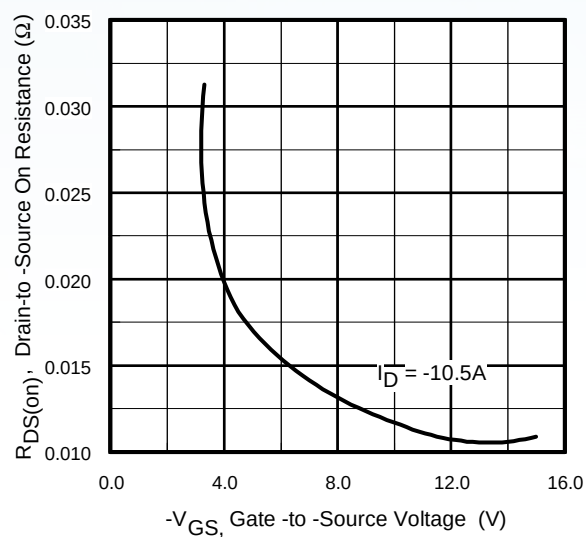


Fig 12. Typical On-Resistance Vs. Gate Voltage

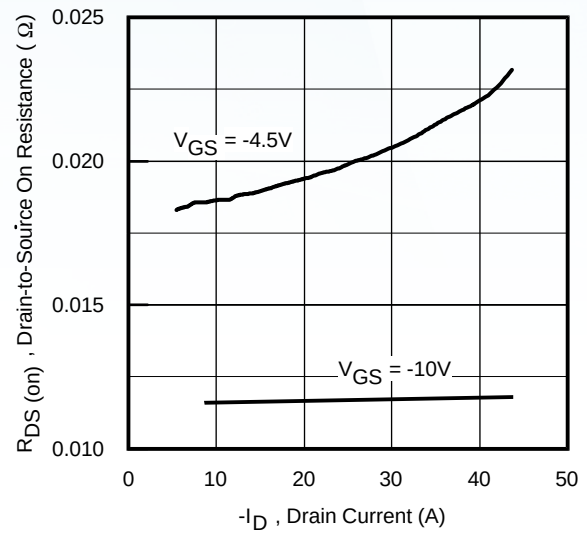


Fig 13. Typical On-Resistance Vs. Drain Current

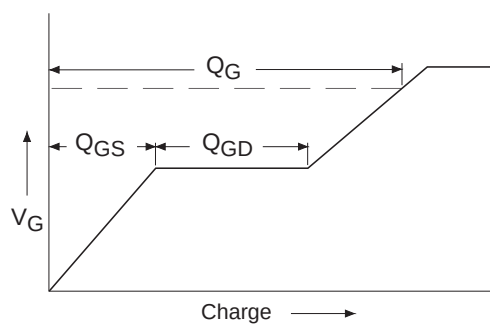


Fig 14a. Basic Gate Charge Waveform

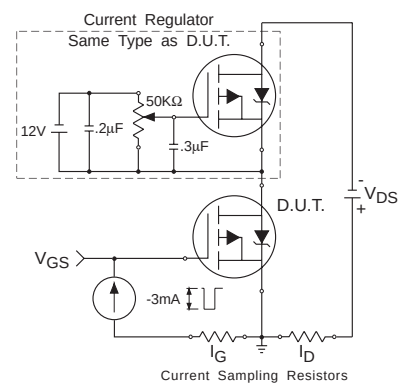


Fig 14b. Gate Charge Test Circuit

P-Channel MOSFET

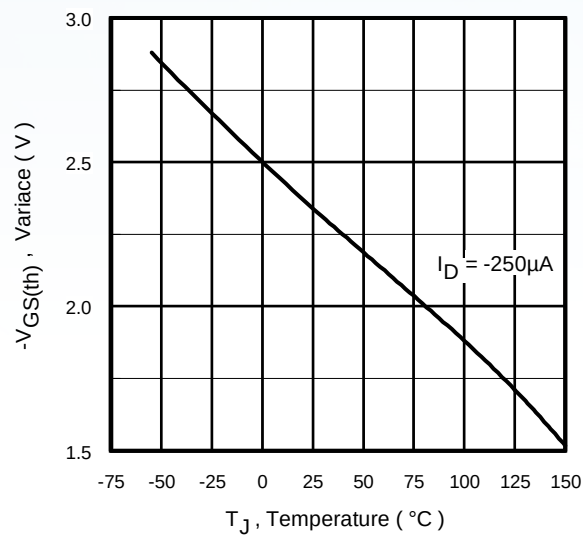


Fig 15. Typical $V_{GS(th)}$ Variance Vs. Junction Temperature

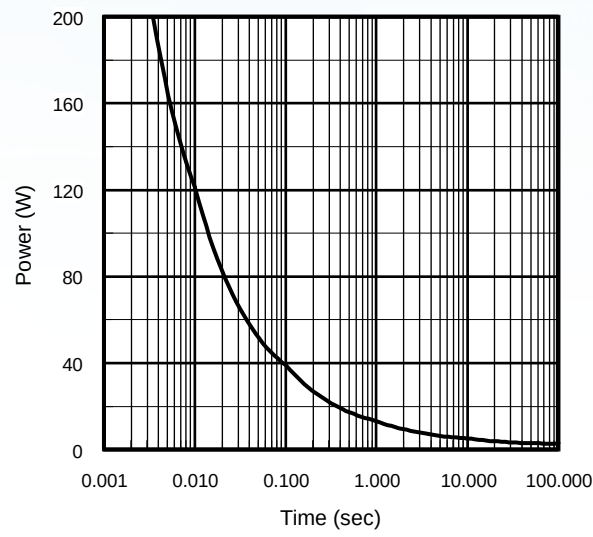
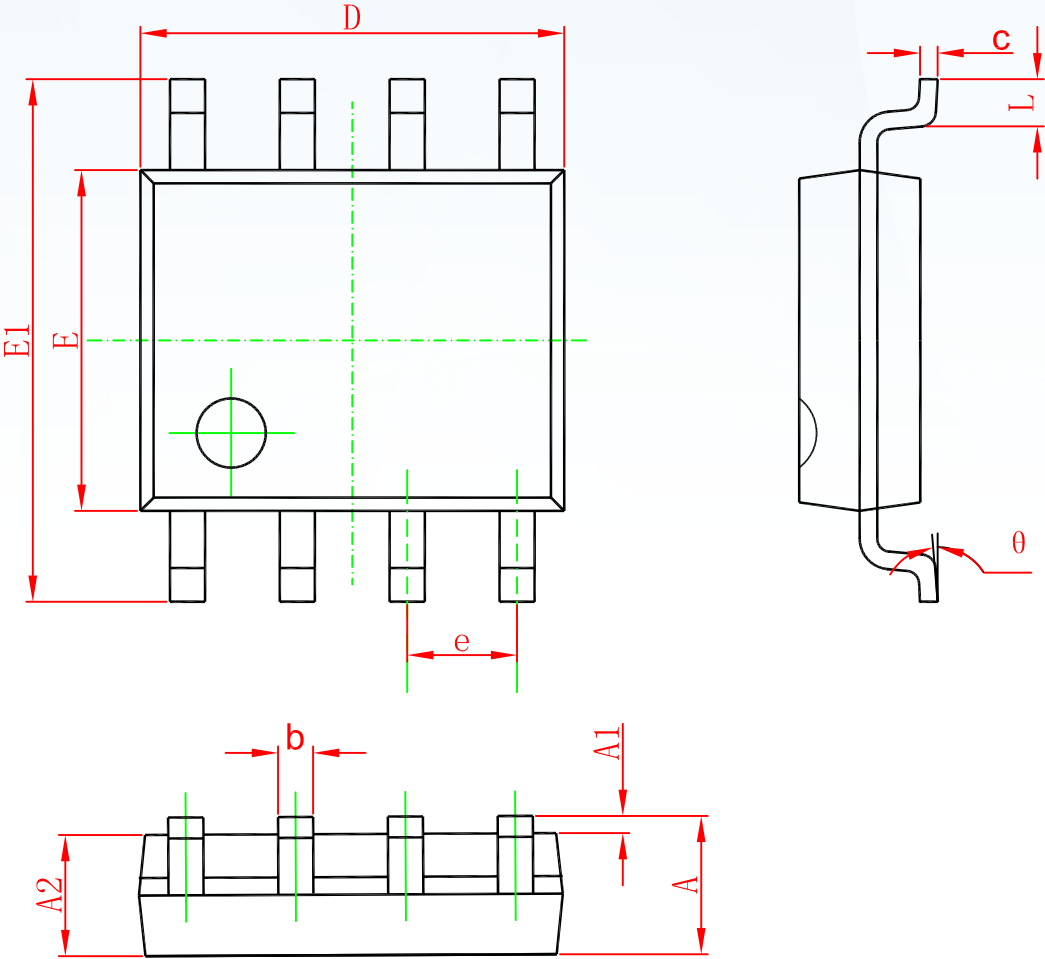


Fig 16. Typical Power Vs. Time

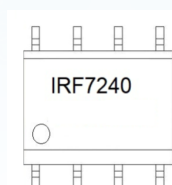
P-Channel MOSFET

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°

P-Channel MOSFET

Marking**Ordering information**

Order code	Package	Baseqty	Deliverymode
IRF7240	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.