

EVVOSEMI[®]

THINK CHANGE DO



ESD



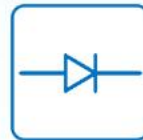
TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRF7424
▶ Overseas	Part Number	IRF7424
▶ Equivalent	Part Number	IRF7424

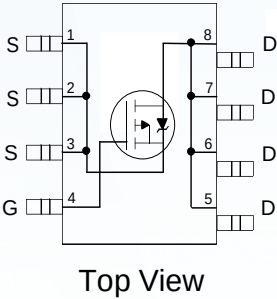
EV is the abbreviation of name EVVO

P-Channel 30 V (D-S) MOSFET

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

V_{DSS}	$R_{DS(on)}$ max (mΩ)	I_D
-30V	13.5@ $V_{GS} = -10V$	-11A
	22@ $V_{GS} = -4.5V$	-8.8A



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-30	V
$I_D @ T_A = 25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-11	A
$I_D @ T_A = 70^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-9.3	
I_{DM}	Pulsed Drain Current ①	-47	
$P_D @ T_A = 25^{\circ}C$	Power Dissipation ③	2.5	W
$P_D @ T_A = 70^{\circ}C$	Power Dissipation ③	1.6	
	Linear Derating Factor	20	
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	$^{\circ}C$

Thermal Resistance

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

P-Channel 30 V (D-S) MOSFET
Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

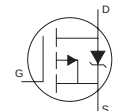
	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-30	—	—	V	$V_{GS} = 0V$, $I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.019	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	13.5	m Ω	$V_{GS} = -10V$, $I_D = -11A$ ②
		—	—	22		$V_{GS} = -4.5V$, $I_D = -8.8A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	-2.5	V	$V_{DS} = V_{GS}$, $I_D = -250\mu A$
g_{fs}	Forward Transconductance	17	—	—	S	$V_{DS} = -10V$, $I_D = -11A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-15	μA	$V_{DS} = -24V$, $V_{GS} = 0V$
		—	—	-25		$V_{DS} = -24V$, $V_{GS} = 0V$, $T_J = 70^\circ\text{C}$
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	—	75	110	nC	$I_D = -11A$
Q_{gs}	Gate-to-Source Charge	—	14	21		$V_{DS} = -15V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	12	18		$V_{GS} = -10V$
$t_{d(on)}$	Turn-On Delay Time	—	15	—	ns	$V_{DD} = -15V$ ②
t_r	Rise Time	—	23	—		$I_D = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	150	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	76	—		$V_{GS} = -10V$
C_{iss}	Input Capacitance	—	4030	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	580	—		$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance	—	410	—		$f = 1.0\text{kHz}$

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	—	—	-47		
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	—	40	60	ns	$T_J = 25^\circ\text{C}$, $I_F = -2.5A$
Q_{rr}	Reverse Recovery Charge	—	47	71	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



P-Channel 30 V (D-S) MOSFET

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

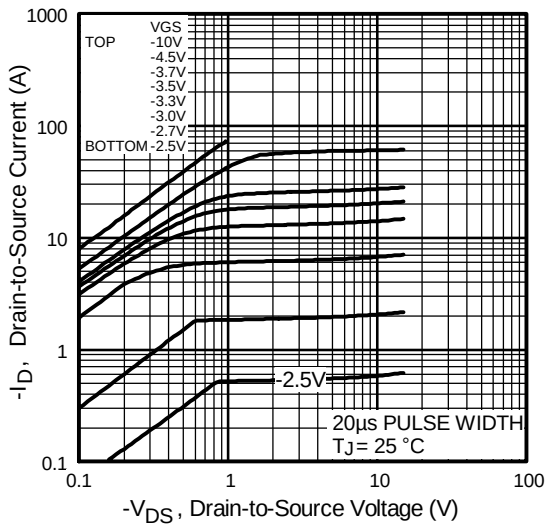


Fig 1. Typical Output Characteristics

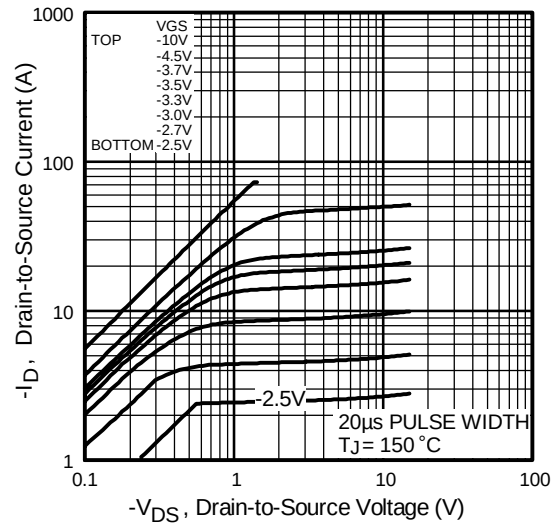


Fig 2. Typical Output Characteristics

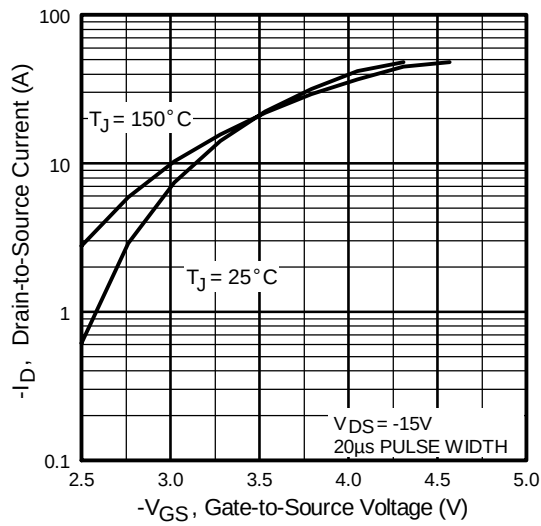


Fig 3. Typical Transfer Characteristics

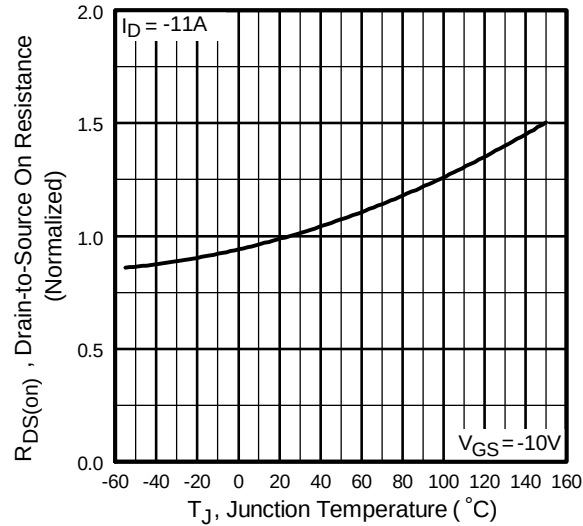


Fig 4. Normalized On-Resistance Vs. Temperature

P-Channel 30 V (D-S) MOSFET

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

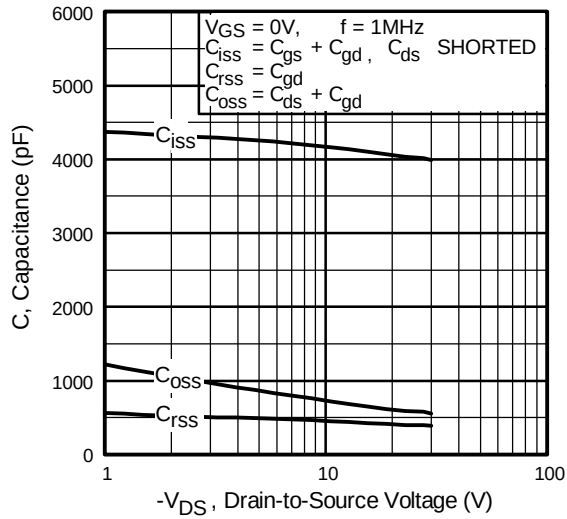


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

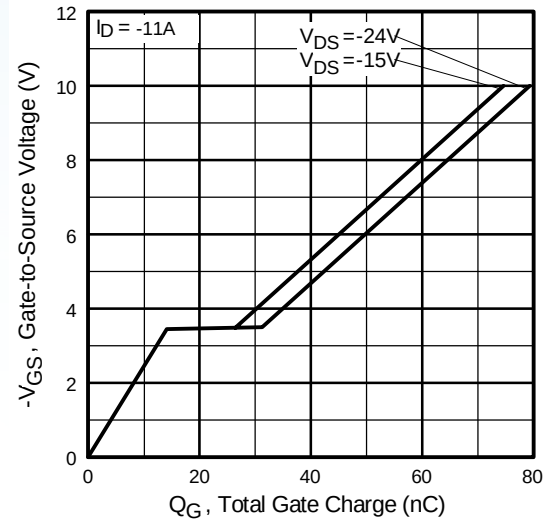


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

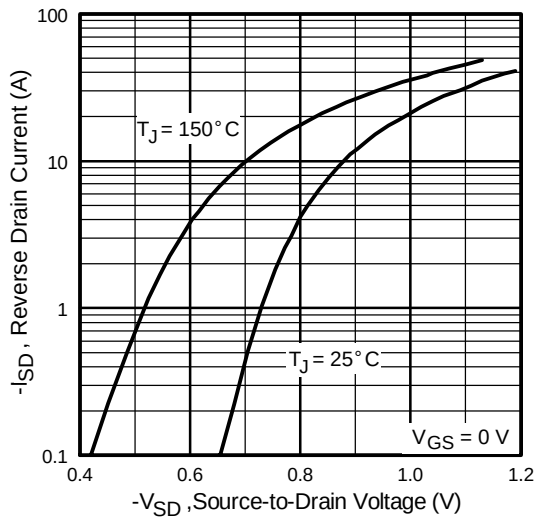


Fig 7. Typical Source-Drain Diode Forward Voltage

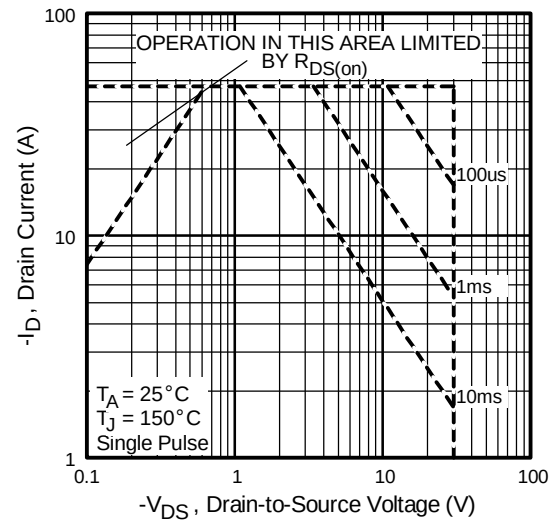


Fig 8. Maximum Safe Operating Area

P-Channel 30 V (D-S) MOSFET

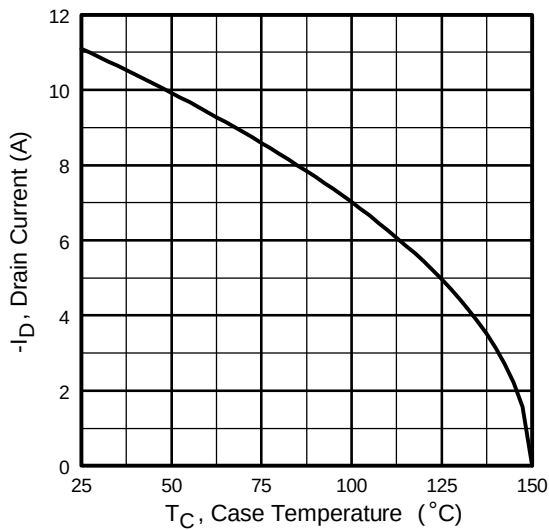


Fig 9. Maximum Drain Current Vs. Case Temperature

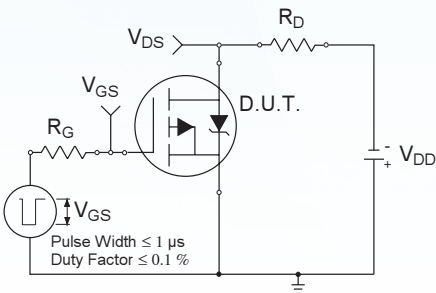


Fig 10a. Switching Time Test Circuit

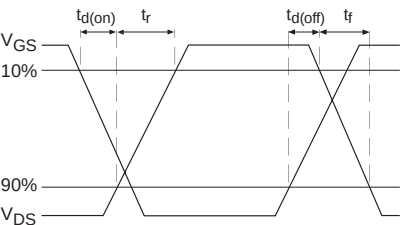


Fig 10b. Switching Time Waveforms

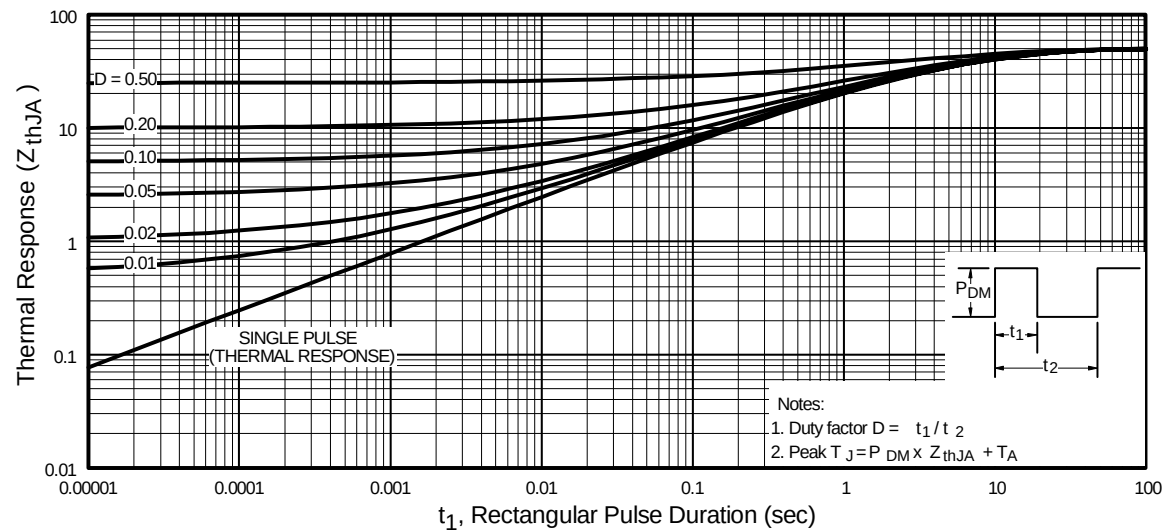


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

P-Channel 30 V (D-S) MOSFET

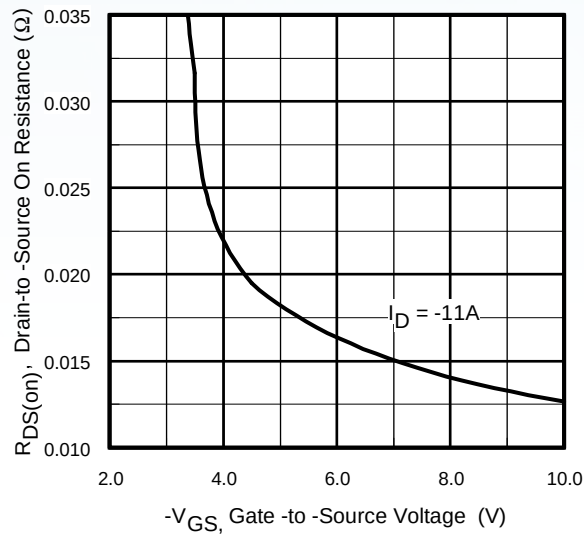


Fig 12. Typical On-Resistance Vs. Gate Voltage

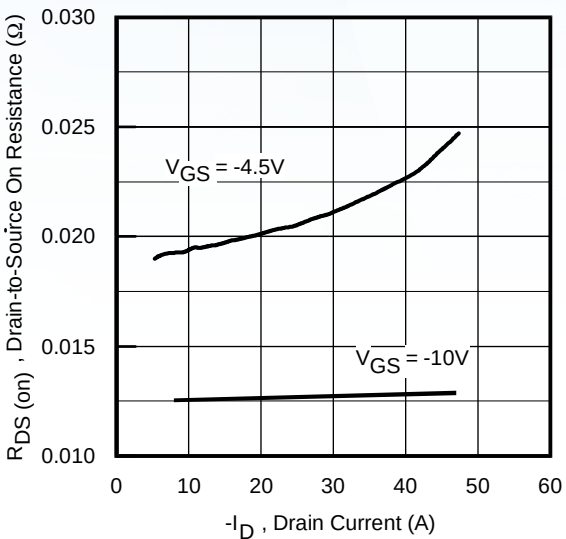


Fig 13. Typical On-Resistance Vs. Drain Current

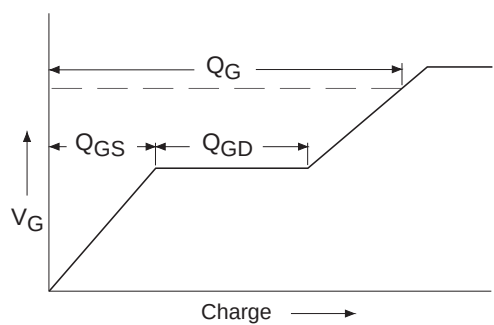


Fig 14a. Basic Gate Charge Waveform

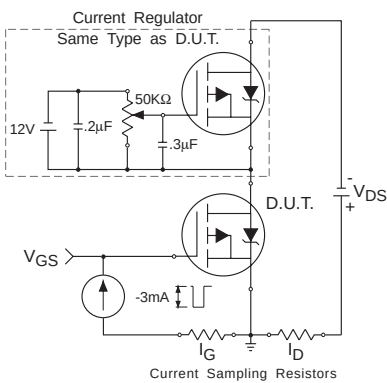


Fig 14b. Gate Charge Test Circuit

P-Channel 30 V (D-S) MOSFET

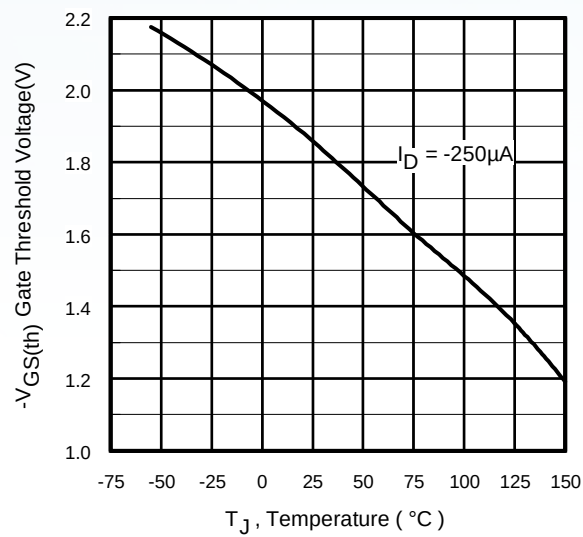


Fig 15. Typical $V_{GS(th)}$ Vs. Junction Temperature

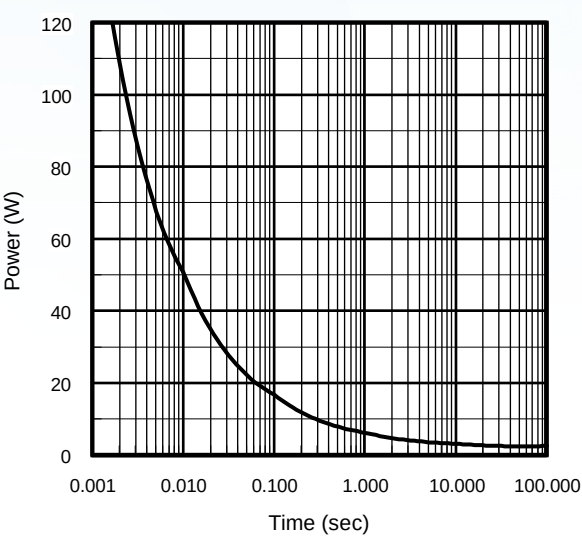
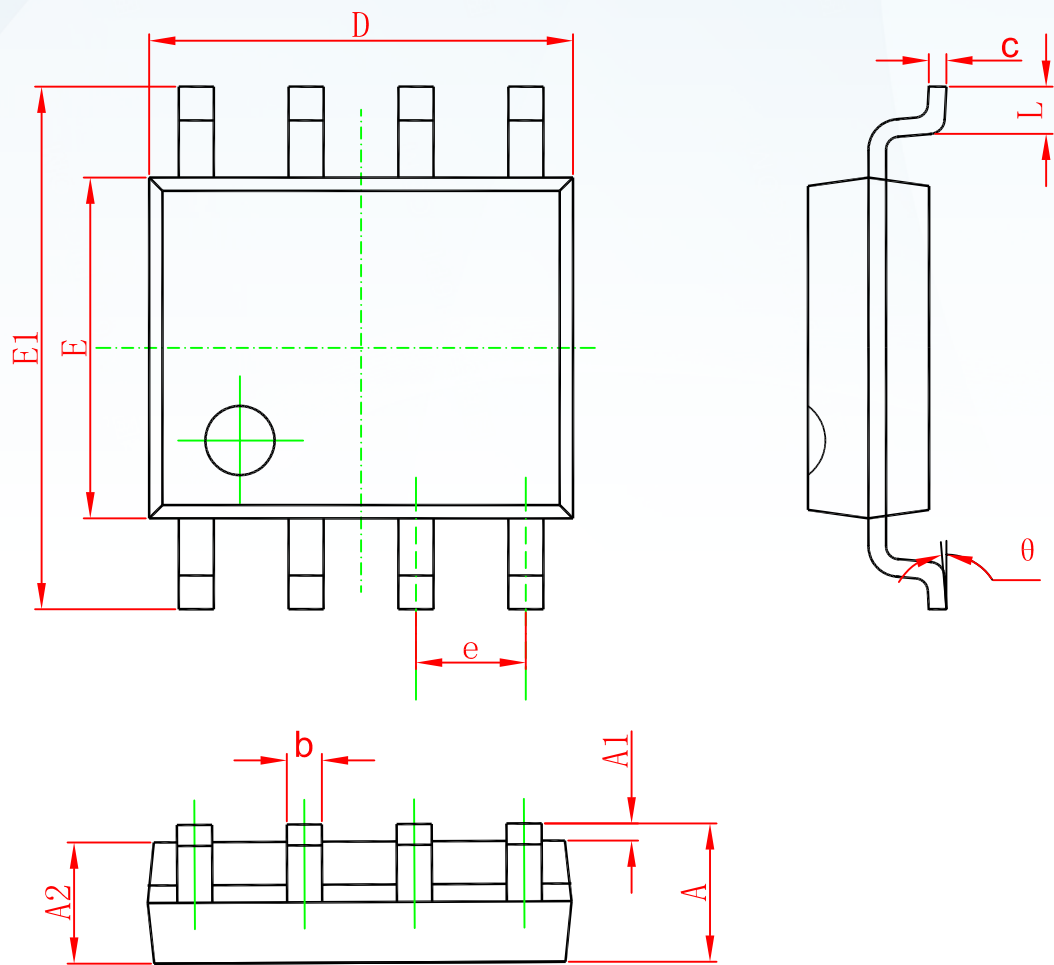


Fig 16. Typical Power Vs. Time

P-Channel 30 V (D-S) MOSFET

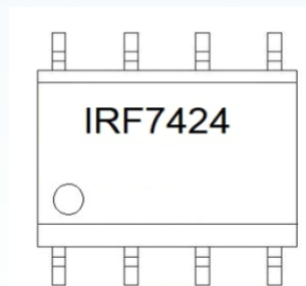
SOP-8



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 30 V (D-S) MOSFET

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
IRF7424	SOP-8	3000	Tape and reel

Disclaimer

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