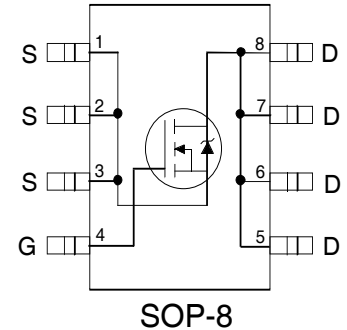


### Description

The IRF7809AV has been optimized for all parameters that are critical in synchronous buck converters including  $R_{DS(on)}$ , gate charge and Cdv/dt-induced turn-on immunity. The IRF7809AV offers particularly low  $R_{DS(on)}$  and high Cdv/dt immunity for synchronous FET applications. The package is designed for vapor phase, infra-red, convection, or wave soldering techniques. Power dissipation of greater than 2W is possible in a typical PCB mount application.



### Features

- $V_{DS(V)} = 30V$
- $I_D = 15 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 9 m\Omega (V_{GS}=4.5V)$

### Absolute Maximum Ratings

Parameter	Symbol	IRF7809A V	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain or Source Current ( $V_{GS} \geq 4.5V$ )	$T_A = 25^\circ C$	13.3	A
	$T_L = 90^\circ C$	14.6	
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	100	
Power Dissipation	$T_A = 25^\circ C$	2.5	W
	$T_L = 90^\circ C$	3.0	
Junction & Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$
Continuous Source Current (Body Diode)	$I_S$	2.5	A
Pulsed Source Current <sup>①</sup>	$I_{SM}$	50	

### Thermal Resistance

Parameter		Max.	Units
Maximum Junction-to-Ambient <sup>③</sup>	$R_{\theta JA}$	50	$^\circ C/W$
Maximum Junction-to-Lead	$R_{\theta JL}$	20	$^\circ C/W$

### Electrical Characteristics

Parameter		Min	Typ	Max	Units	Conditions
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	30	–	–	V	$V_{GS} = 0V, I_D = 250\mu A$
Static Drain-Source on Resistance	$R_{DS(on)}$		7.0	9.0	m $\Omega$	$V_{GS} = 4.5V, I_D = 15A$ Ⓞ
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.2	1.4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Drain-Source Leakage Current	$I_{DSS}$			30	$\mu A$	$V_{DS} = 24V, V_{GS} = 0$
				150		$V_{DS} = 24V, V_{GS} = 0,$ $T_j = 100^\circ C$
Gate-Source Leakage Current*	$I_{GSS}$			$\pm 100$	nA	$V_{GS} = \pm 12V$
Total Gate Chg Cont FET	$Q_G$		41	62	nC	$V_{GS}=5V, I_D=15A, V_{DS}=20V$
Total Gate Chg Sync FET	$Q_G$		36	54		$V_{GS} = 5V, V_{DS} < 100mV$
Pre-Vth Gate-Source Charge	$Q_{GS1}$		7.0			$V_{DS} = 20V, I_D = 15A$
Post-Vth Gate-Source Charge	$Q_{GS2}$		2.3			
Gate to Drain Charge	$Q_{GD}$		12			$I_D=15A, V_{DS}=16V$
Switch Chg( $Q_{gs2} + Q_{gd}$ )	$Q_{sw}$		14	21		
Output Charge*	$Q_{oss}$		30	45		$V_{DS} = 16V, V_{GS} = 0$
Gate Resistance	$R_G$		1.5	3.0		$\Omega$
Turn-on Delay Time	$t_{d(on)}$		14		ns	$V_{DD} = 16V, I_D = 15A$ $V_{GS} = 5V$ Clamped Inductive Load
Rise Time	$t_r$		36			
Turn-off Delay Time	$t_{d(off)}$		96			
Fall Time	$t_f$		10			
Input Capacitance	$C_{iss}$	–	3780	–	pF	$V_{DS} = 16V, V_{GS} = 0$
Output Capacitance	$C_{oss}$	–	1060	–		
Reverse Transfer Capacitance	$C_{rss}$	–	130	–		

### Source-Drain Rating & Characteristics

Parameter		Min	Typ	Max	Units	Conditions
Diode Forward Voltage*	$V_{SD}$			1.3	V	$I_S = 15A$ Ⓞ, $V_{GS} = 0V$
Reverse Recovery ChargeⓄ	$Q_{rr}$		120		nC	$di/dt \sim 700A/\mu s$ $V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$
Reverse Recovery Charge (with Parallel Schottky)Ⓞ	$Q_{rr(s)}$		150		nC	$di/dt = 700A/\mu s$ (with 10BQ040) $V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$

#### Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Pulse width  $\leq 400 \mu s$ ; duty cycle  $\leq 2\%$ .
3. When mounted on 1 inch square copper board,  $t < 10$  sec.
4. Typ = measured -  $Q_{oss}$
5. Typical values measured at  $V_{GS} = 4.5V, I_F = 15A$ .

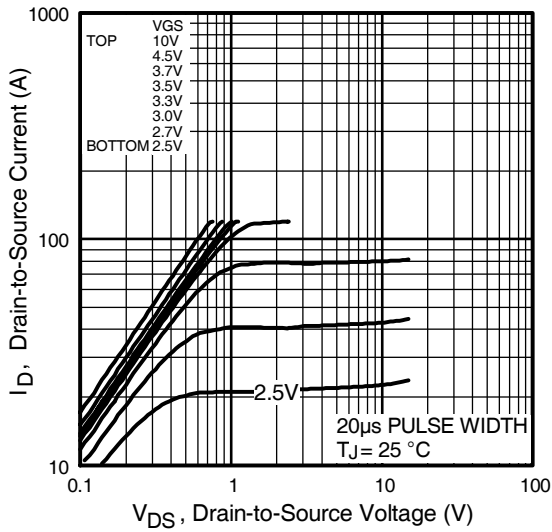


Fig 1. Typical Output Characteristics

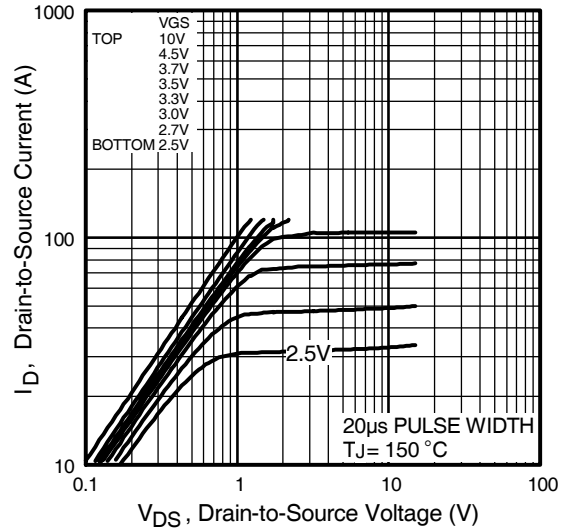


Fig 2. Typical Output Characteristics

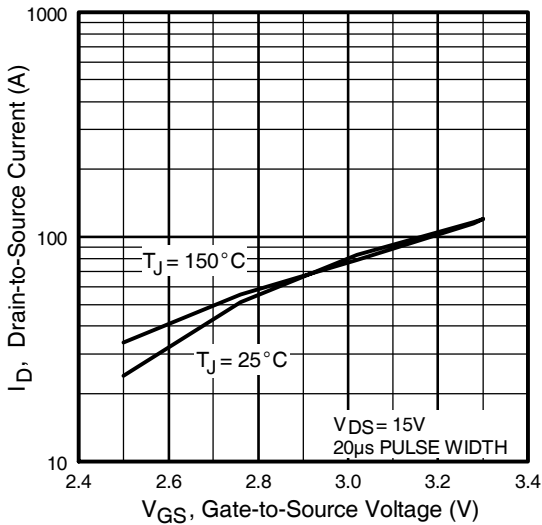


Fig 3. Typical Transfer Characteristics

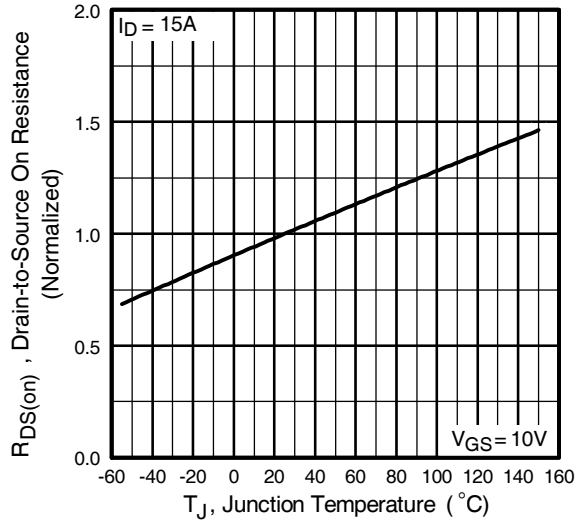


Fig 4. Normalized On-Resistance Vs. Temperature

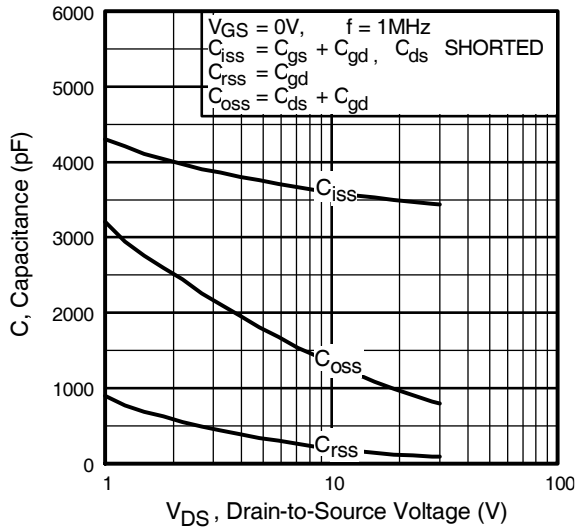


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

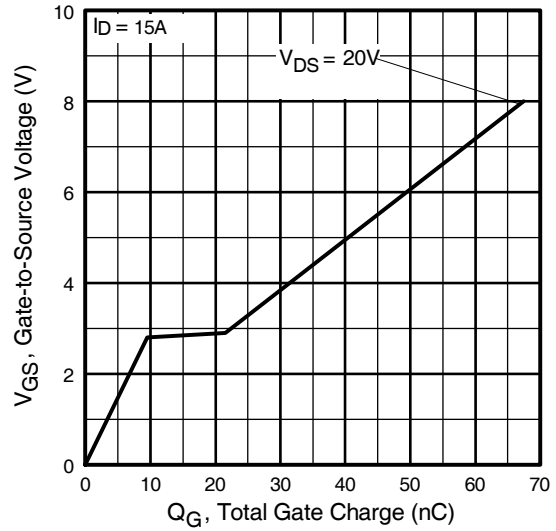


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

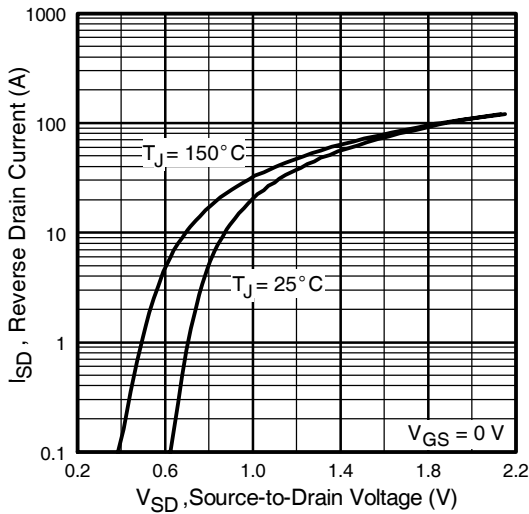


Fig 7. Typical Source-Drain Diode Forward Voltage

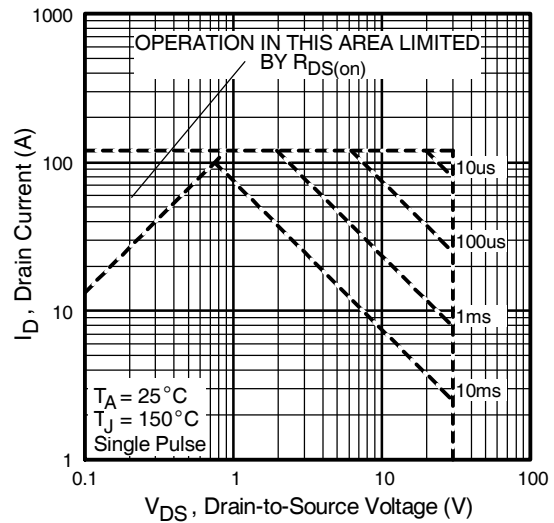


Fig 8. Maximum Safe Operating Area

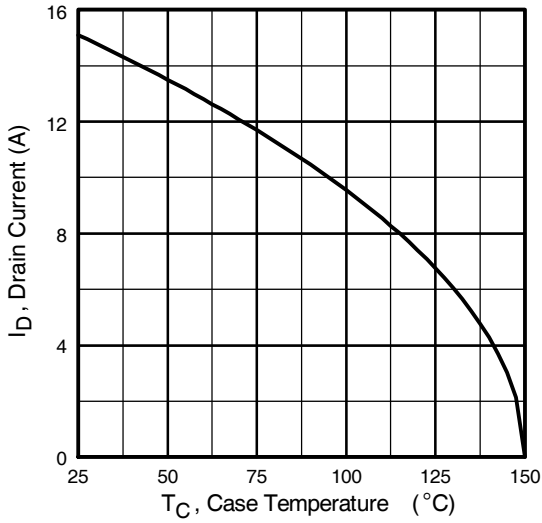


Fig 9. Maximum Drain Current Vs. Case Temperature

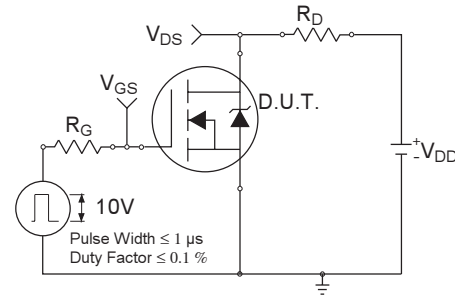


Fig 10a. Switching Time Test Circuit

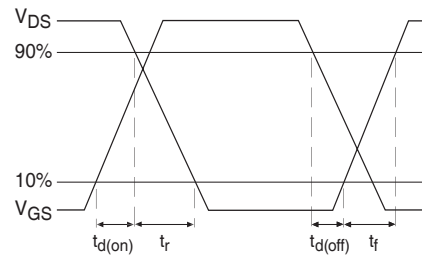


Fig 10b. Switching Time Waveforms

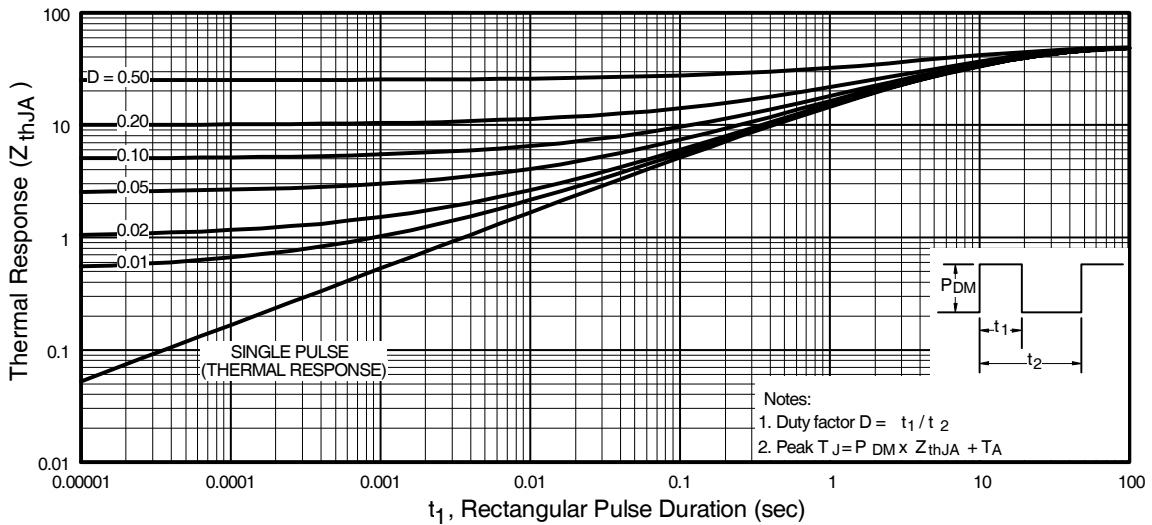


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

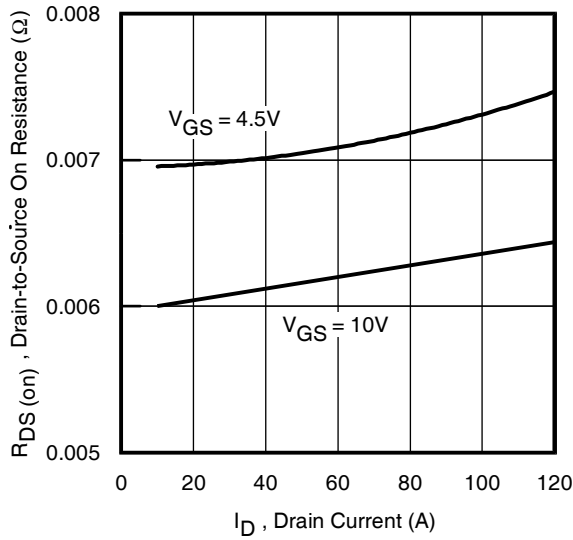


Fig 12. On-Resistance Vs. Drain Current

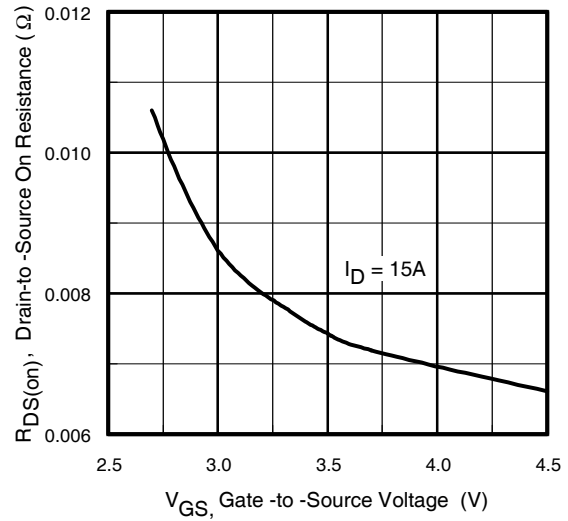


Fig 13. On-Resistance Vs. Gate Voltage

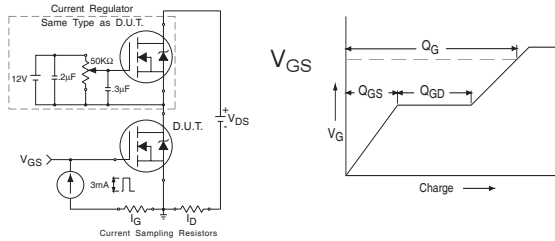


Fig 13a&b. Basic Gate Charge Test Circuit and Waveform

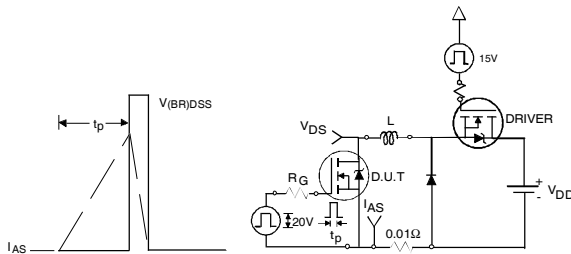


Fig 14a&b. Unclamped Inductive Test circuit and Waveforms

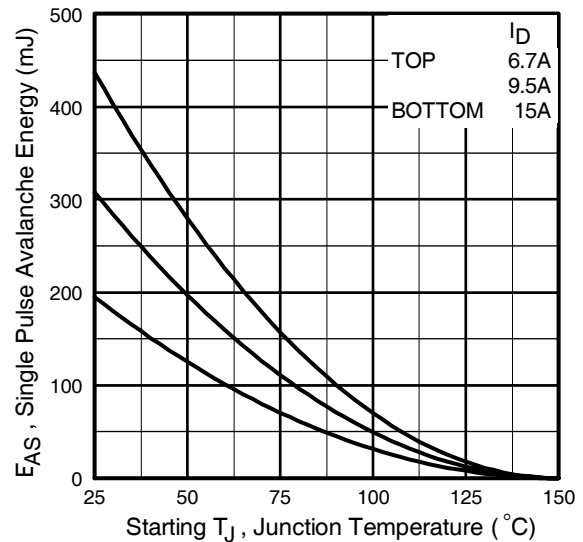
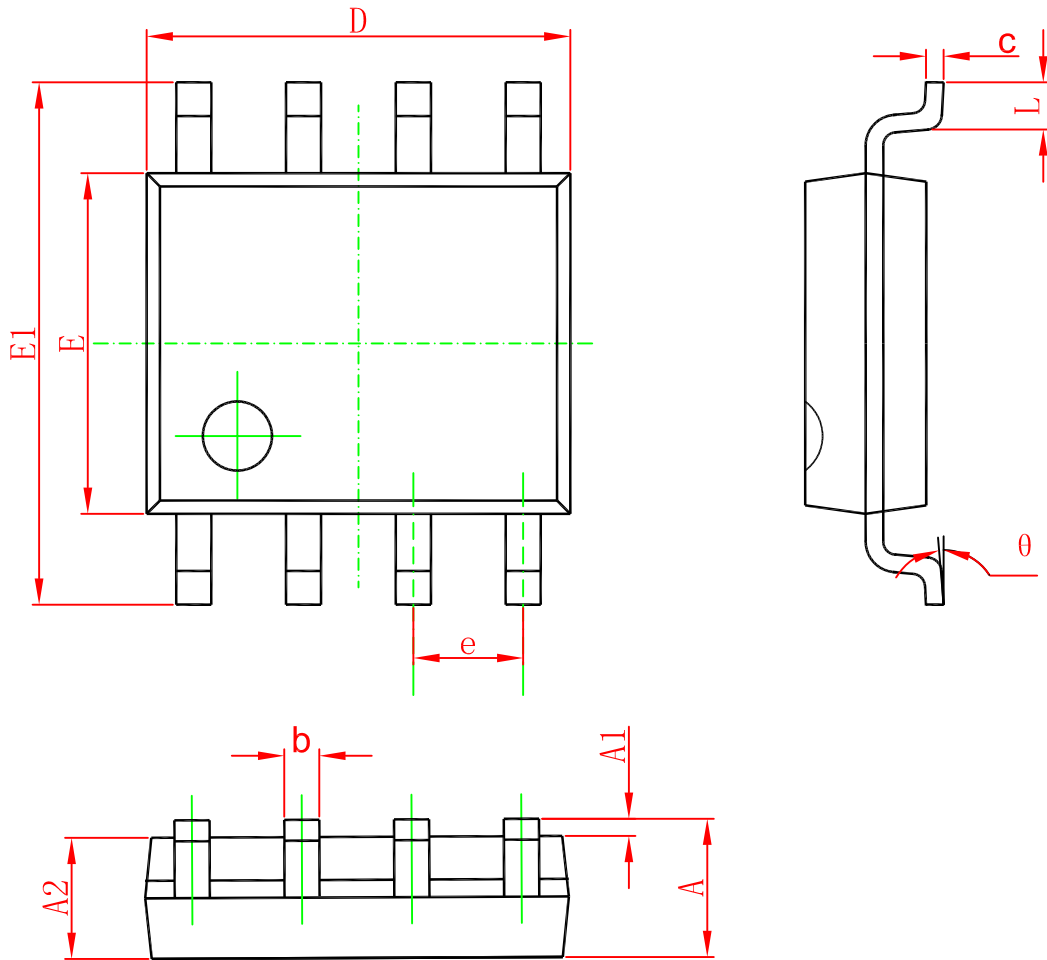


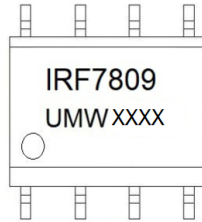
Fig 14c. Maximum Avalanche Energy Vs. Drain Current

Package Mechanical Data 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°

**Marking**



**Ordering information**

Order code	Package	Baseqty	Deliverymode
UMW IRF7809AVTR	SOP-8	3000	Tape and reel



单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)