

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



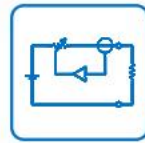
ESD



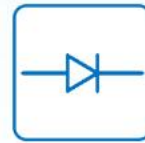
TVS



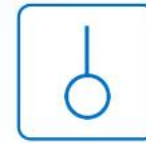
MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

▶ Domestic	Part Number	IRF8714
▶ Overseas	Part Number	IRF8714
▶ Equivalent	Part Number	IRF8714

EV is the abbreviation of name EVVO

V <sub>DSS</sub> (V)	R <sub>DS (ON)</sub>	I <sub>D(A)</sub>
30	18mΩ(Typ)@V <sub>GS</sub> =10V	7
-30	36mΩ(Typ)@V <sub>GS</sub> =-10V	-6

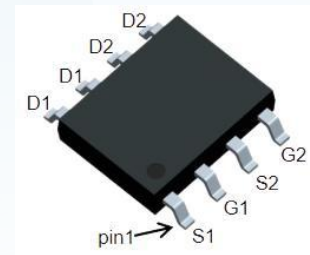
**FEATURE:**

- The IRF8714 is the highest performance trench N-ch and P-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

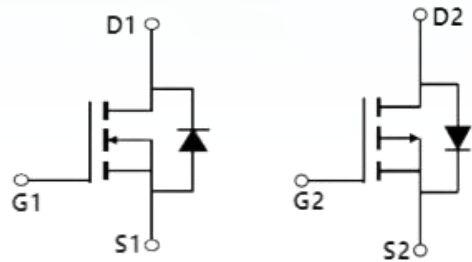
**APPLICATIONS:**

- Power management in half bridge and inverters
- DC-DC Converter
- Load Switch

**Pin Description**



**SOP-8**



**Absolute Maximum Ratings**

Symbol	Parameter	Rating		Units	
		N-Channel	P-Channel		
V <sub>DSS</sub>	Drain-Source Voltage	30	-30	V	
V <sub>GSS</sub>	Gate-Source Voltage	±20	±20	V	
I <sub>D</sub>	Continuous Drain Current(V <sub>GS</sub> = -4.5V)	T <sub>A</sub> =25°C	7	-6	A
		T <sub>A</sub> =70°C	6	-4	
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	20	-12	A	
P <sub>D</sub>	Maximum Power Dissipation	T <sub>A</sub> =25°C	---	---	W
		T <sub>A</sub> =70°C	---	---	
E <sub>AS</sub>	Avalanche Energy, Single Pulsed	72	59	mJ	
R <sub>θJC</sub>	Thermal Resistance-Junction to Case	50		°C/W	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	85		°C/W	

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250uA	30	---	---	V
VGS(th)	Gate threshold voltage	VDS=VGS, ID=250uA	1.0	1.5	2.5	V
RDS(on)	Drain-Source On-state Resistance	VGS=10V, ID=6A	---	18	25	mΩ
		VGS=4.5V, ID=-5A	---	25	31	mΩ
IGSS	Gate-source leakage current	VGS=±12V, VDS=0V	---	---	±100	A
IDSS	Zero gate voltage drain current	VDS=20V, VGS=0V, T <sub>J</sub> =25°C	---	---	1	μA
		T <sub>J</sub> =55°C	---	---	5	
<b>Dynamic Characteristic</b>						
Ciss	Input Capacitance	VGS=0V, VDS=10V, Frequency=1.0MHz	---	370	---	pF
Coss	Output Capacitance		---	70	---	
Crss	Reverse Transfer Capacitance		---	57	---	
QG	Gate Total Charge	VDS=10V, VGS=5V, IDS=3A	---	7.2	---	nC
Qgs	Gate-Source charge		---	1.4	---	
Qgd	Gate-Drain charge		---	2.2	---	
td(on)	Turn-on delay time	VDD=10V, VGS=5V, RG=5Ω, ID=3A	---	3.9	---	ns
tr	Turn-on Rise Time		---	9.2	---	
td(off)	Turn-off Delay Time		---	14.5	---	
tf	Turn-off Fall Time		---	6.0	---	
RG	Gate Resistance	VGS=0V, VDS=0V, F=1MHz	---	2.5	---	Ω
<b>Diode Characteristics</b>						
VSD	Diode Forward Voltage	VGS=0V, IS=1A, T <sub>J</sub> =25°C	---	---	1.2	V
trr	Reverse Recovery Time	ISD=4.1A, dISD/dt=-100A/μs	---	---	---	ns
Qrr	Reverse Recovery Charge		---	---	---	nC

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=-250uA	-30	---	---	V
VGS(th)	Gate threshold voltage	VDS=VGS, ID=-250uA	-1.0	-1.5	-2.5	V
RDS(on)	Drain-Source On-state Resistance	VGS=-10V, ID=-4.5A	---	36	55	mΩ
		VGS=-4.5V, ID=-5A	---	50	75	mΩ
IGSS	Gate-source leakage current	VGS=±12V, VDS=0V	---	---	±100	A
IDSS	Zero gate voltage drain current	VDS=-20V, VGS=0V, T <sub>J</sub> =25°C	---	---	-1	μA
		T <sub>J</sub> =55°C	---	---	---	
<b>Dynamic Characteristic</b>						
Ciss	Input Capacitance	VGS=0V, VDS=-10V, Frequency=1.0MHz	---	530	---	pF
Coss	Output Capacitance		---	70	---	
Crss	Reverse Transfer Capacitance		---	56	---	
QG	Gate Total Charge	VDS=-10V, VGS=-5V, IDS=-3A	---	6.8	---	nC
Qgs	Gate-Source charge		---	1.0	---	
Qgd	Gate-Drain charge		---	1.4	---	
td(on)	Turn-on delay time	VDD=-10V, VGS=-5V, RG=5Ω, ID=-3A	---	14	---	ns
tr	Turn-on Rise Time		---	61	---	
td(off)	Turn-off Delay Time		---	19	---	
tf	Turn-off Fall Time		---	10	---	
RG	Gate Resistance	VGS=0V, VDS=0V, F=1MHz	---	---	---	Ω
<b>Diode Characteristics</b>						
VSD	Diode Forward Voltage	VGS=0V, IS=-1A, T <sub>J</sub> =25°C	---	---	1.2	V
trr	Reverse Recovery Time	ISD=-4.1A, dISD/dt=-100A/μs	---	---	---	ns
Qrr	Reverse Recovery Charge		---	---	---	nC

N-Channel Typical Characteristics

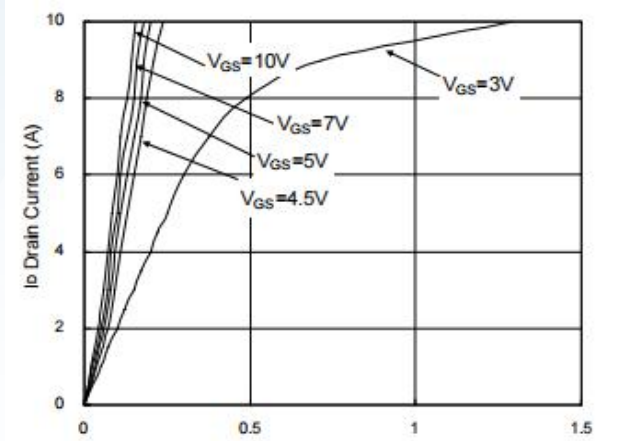


Figure1: Output Characteristics

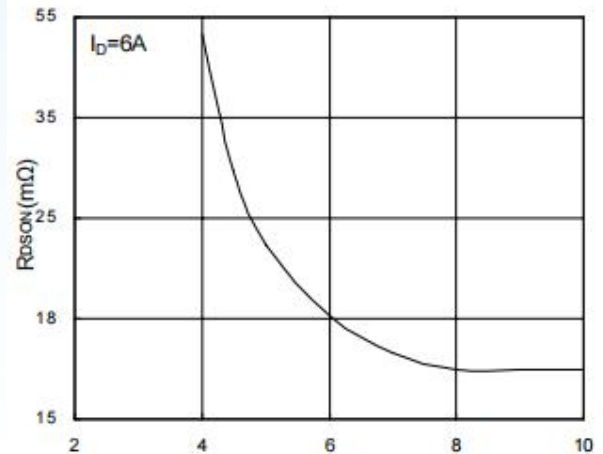


Figure 2: On-resistance vs. G-S Voltage

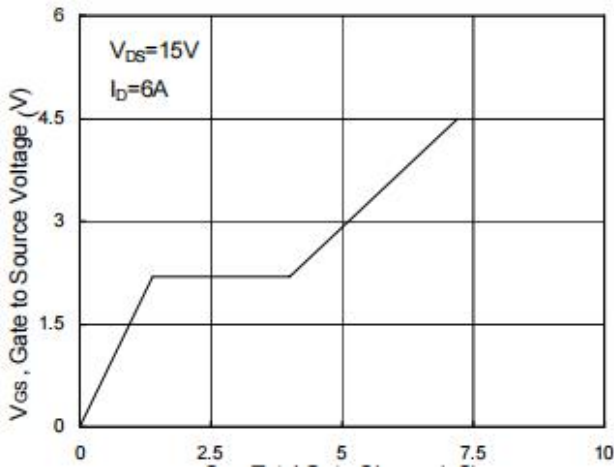


Figure 3: Gate Charge Characteristics

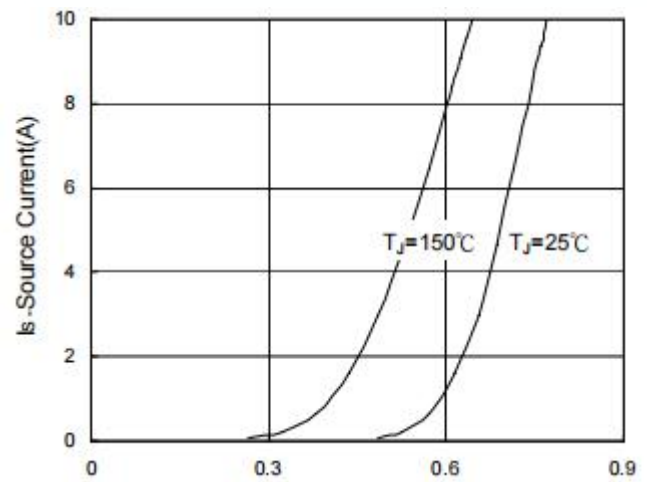


Figure 4: Capacitance Characteristics

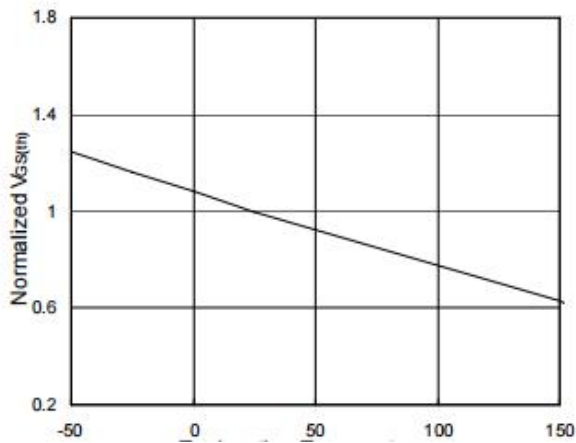


Figure 5: Normalized Breakdown Voltage vs. Junction Temperature

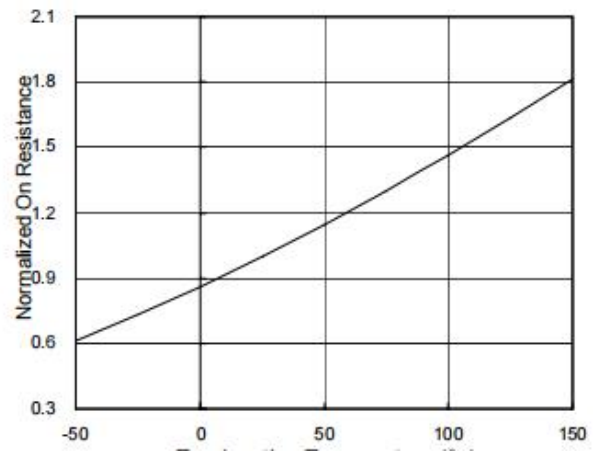


Figure 6: Normalized on Resistance vs. Junction Temperature

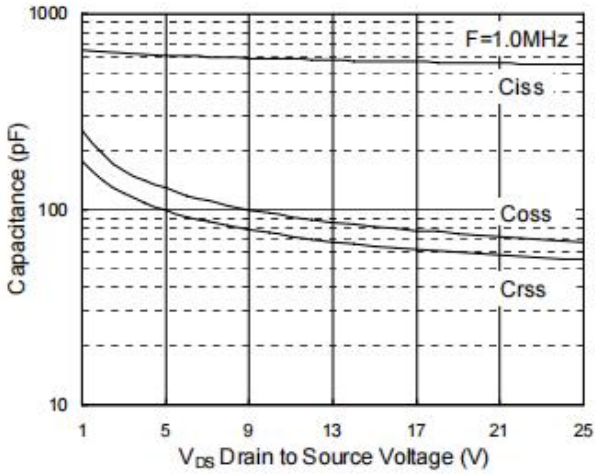


Fig.7 Capacitance

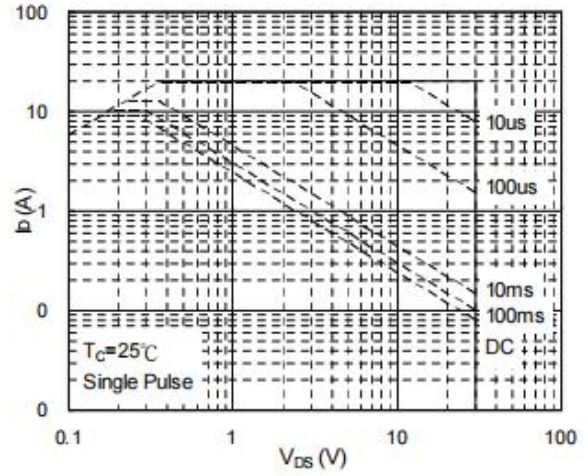


Figure 8: Maximum Safe Operating Area

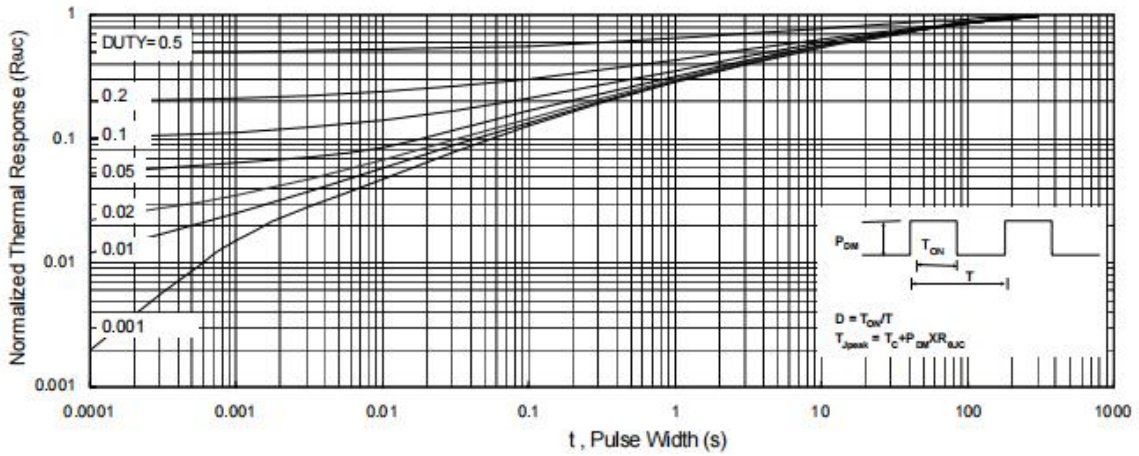
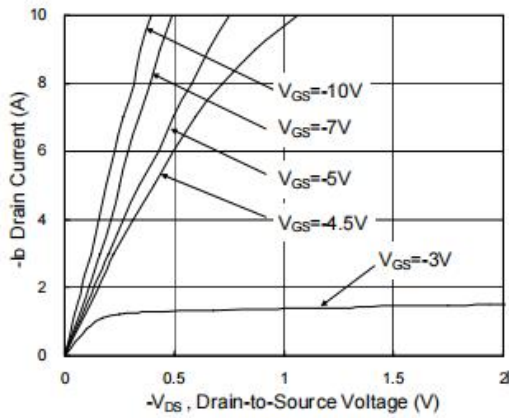
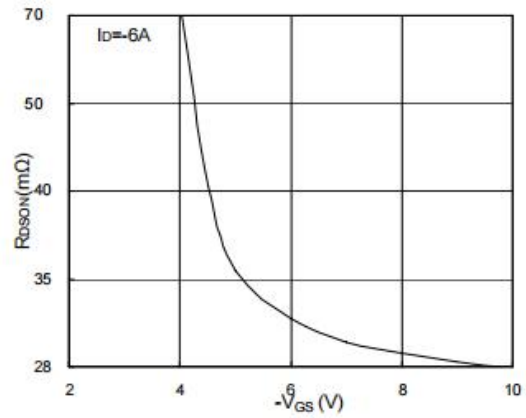


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

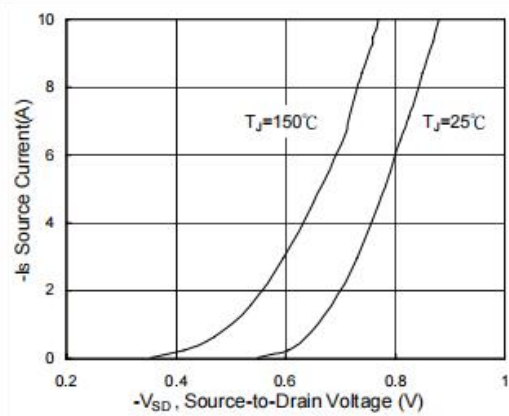
**P-Channel Typical Characteristics**



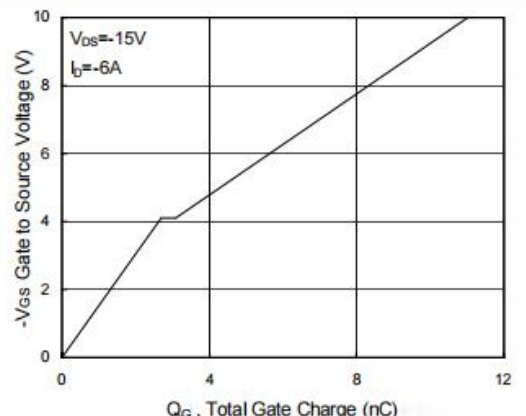
**Fig.1** Typical Output Characteristics



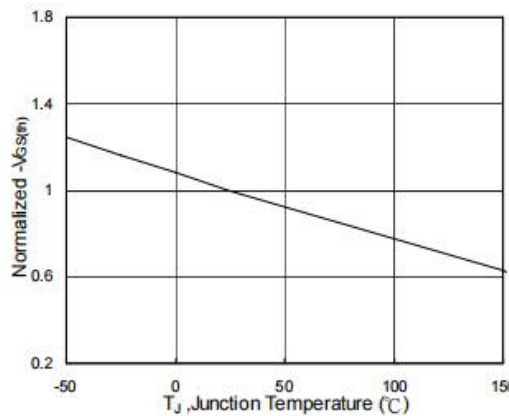
**Fig.2** On-Resistance vs. Gate-Source



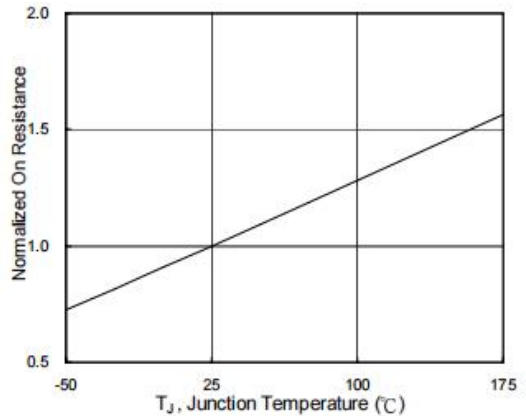
**Fig.3** Forward Characteristics of Reverse



**Fig.4** Gate-charge Characteristics



**Fig.5** Normalized  $V_{GS(th)}$  vs.  $T_J$



**Fig.6** Normalized  $R_{DS(on)}$  vs.  $T_J$

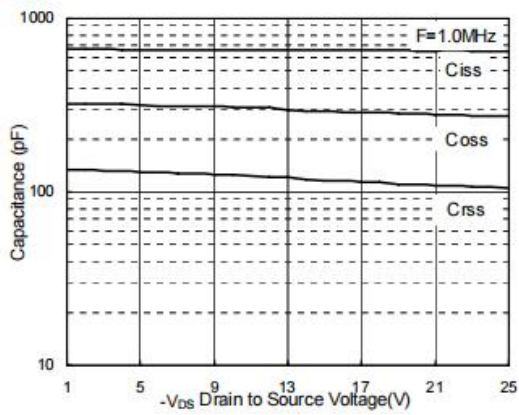


Fig.7 Capacitance

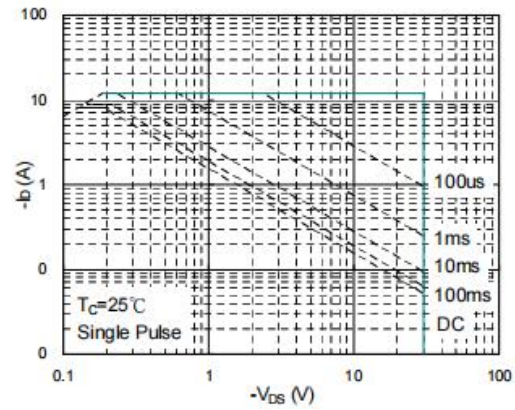


Fig.8 Safe Operating Area

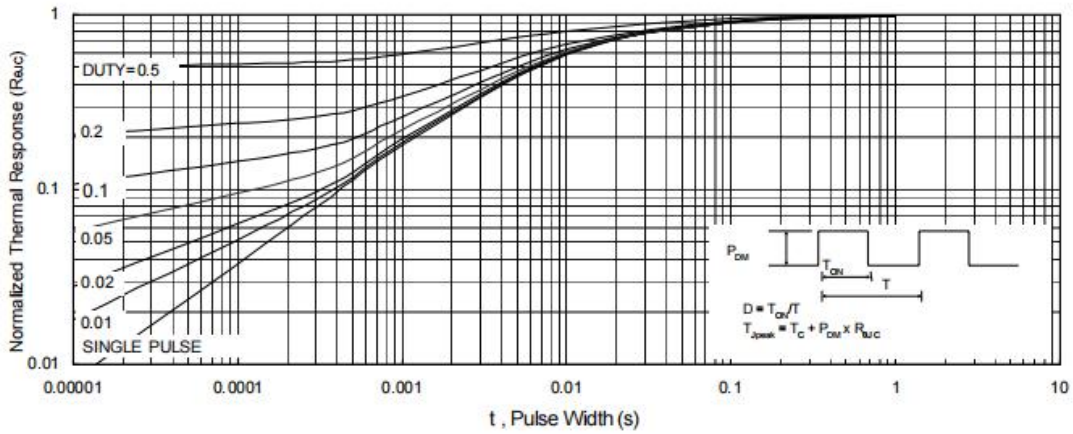
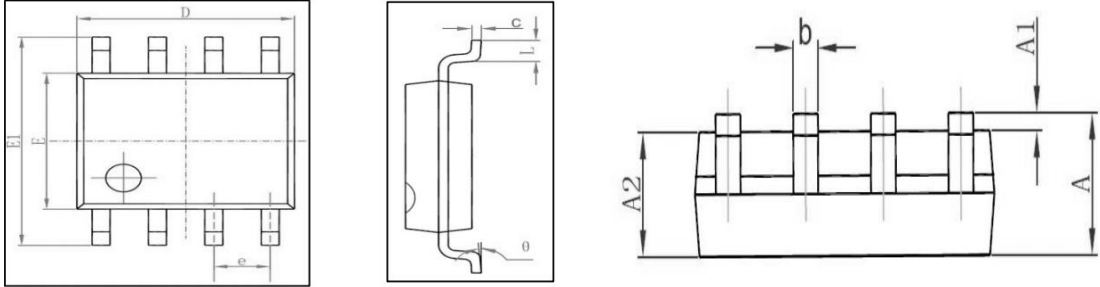


Fig.9 Normalized Maximum Transient Thermal Imp





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°

## Disclaimer

EVOSEMI ("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 EVOSEMI.

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