

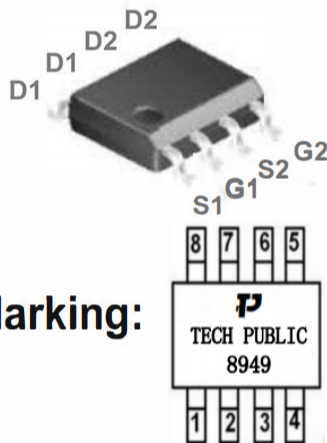
## Product Summary

- $V_{DS} = 40V$   $I_D = 8 A$
- $R_{DS(ON)} < 20m\Omega$  @  $V_{GS}=10 V$
- $R_{DS(ON)} < 25 m\Omega$  @  $V_{GS}=4.5V$

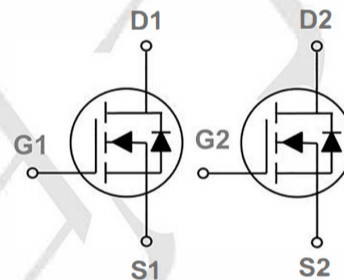
## Application

- DC-DC Converters.
- Load Switch.
- Power Management.

## Package and Pin Configuration



## Circuit diagram



## Absolute Maximum Ratings $T_c=25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current – Continuous ( $T_A=25^\circ C$ )	8	A
	Drain Current – Continuous ( $T_A=70^\circ C$ )	6.4	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	32	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	4.9	mJ
IAS	Single Pulse Avalanche Current <sup>2</sup>	9.9	A
$P_D$	Power Dissipation ( $T_A=25^\circ C$ )	2	W
	Power Dissipation – Derate above $25^\circ C$	0.016	W/ $^\circ C$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-50 to 150	$^\circ C$

## Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62.5	$^\circ C/W$



**Electrical Characteristics** ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

**Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=40V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
		$V_{DS}=32V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA

**On Characteristics**

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=8A$	---		20	m $\Omega$
		$V_{GS}=4.5V, I_D=4A$	---		25	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
gfs	Forward Transconductance	$V_{DS}=10V, I_D=1A$	---	5	---	S

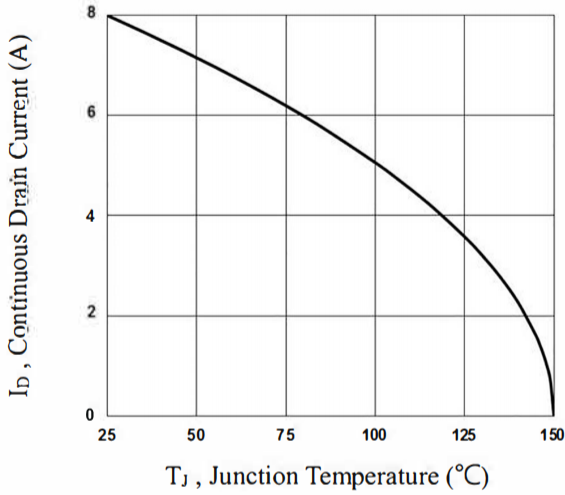
**Dynamic and switching Characteristics**

$Q_g$	Total Gate Charge <sup>2,3</sup>	$V_{DS}=32V, V_{GS}=10V, I_D=3A$	---	10.8	21.6	nC
$Q_{gs}$	Gate-Source Charge <sup>2,3</sup>		---	1.6	3.2	
$Q_{gd}$	Gate-Drain Charge <sup>2,3</sup>		---	3.3	6.6	
$T_{d(on)}$	Turn-On Delay Time <sup>2,3</sup>	$V_{DD}=15V, V_{GS}=10V, R_G=3.3\Omega$ $I_D=1A$	---	3.8	7.6	ns
$T_r$	Rise Time <sup>2,3</sup>		---	10.5	21	
$T_{d(off)}$	Turn-Off Delay Time <sup>2,3</sup>		---	22.2	45	
$T_f$	Fall Time <sup>2,3</sup>		---	6.6	13.2	
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	---	724	1450	pF
$C_{oss}$	Output Capacitance		---	70	140	
$C_{rss}$	Reverse Transfer Capacitance		---	109	220	
$R_g$	Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	2.6	---	$\Omega$

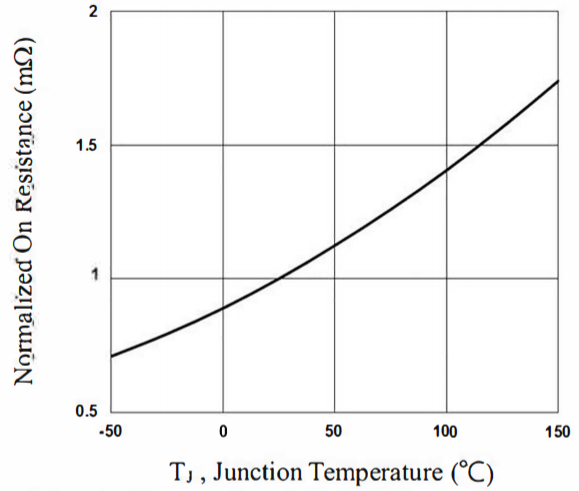
**Drain-Source Diode Characteristics and Maximum Ratings**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	8	A
$I_{SM}$	Pulsed Source Current		---	---	16	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V

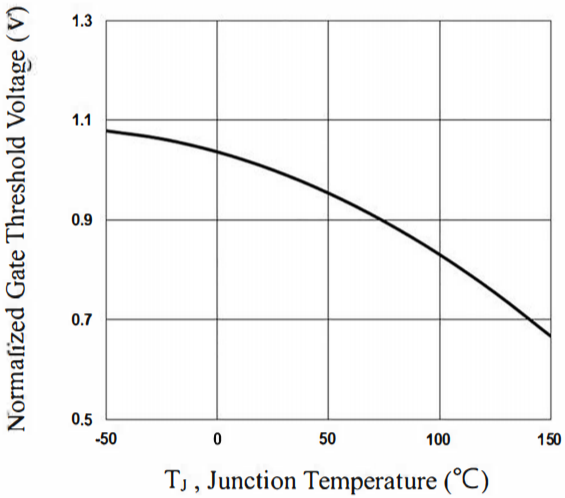
**Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)**



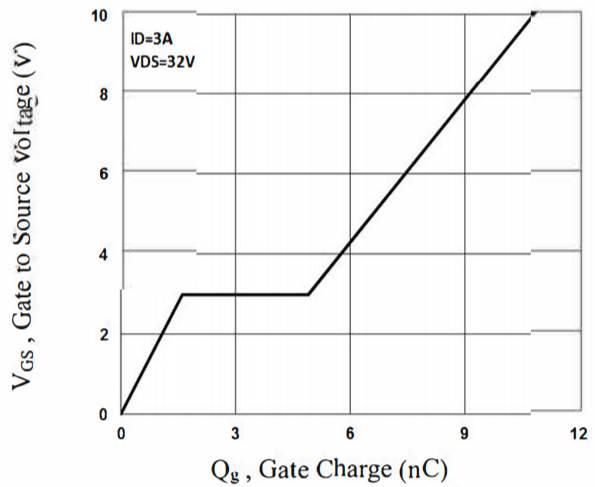
**Fig.1 Continuous Drain Current vs.  $T_c$**



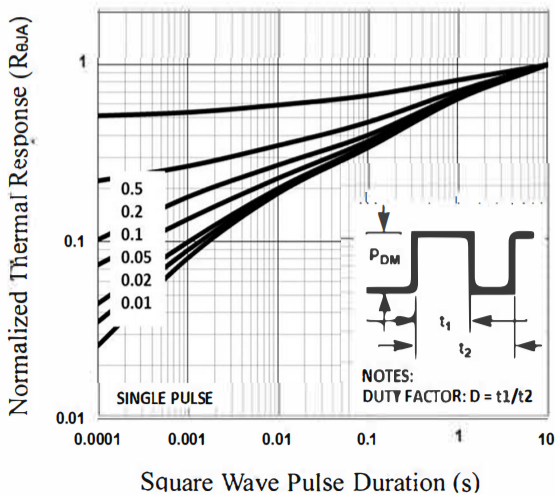
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



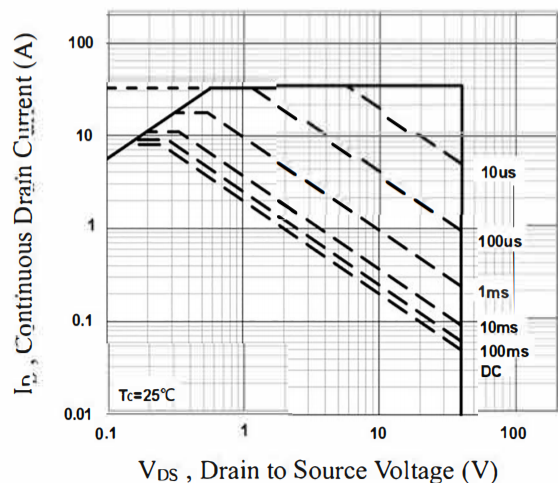
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**



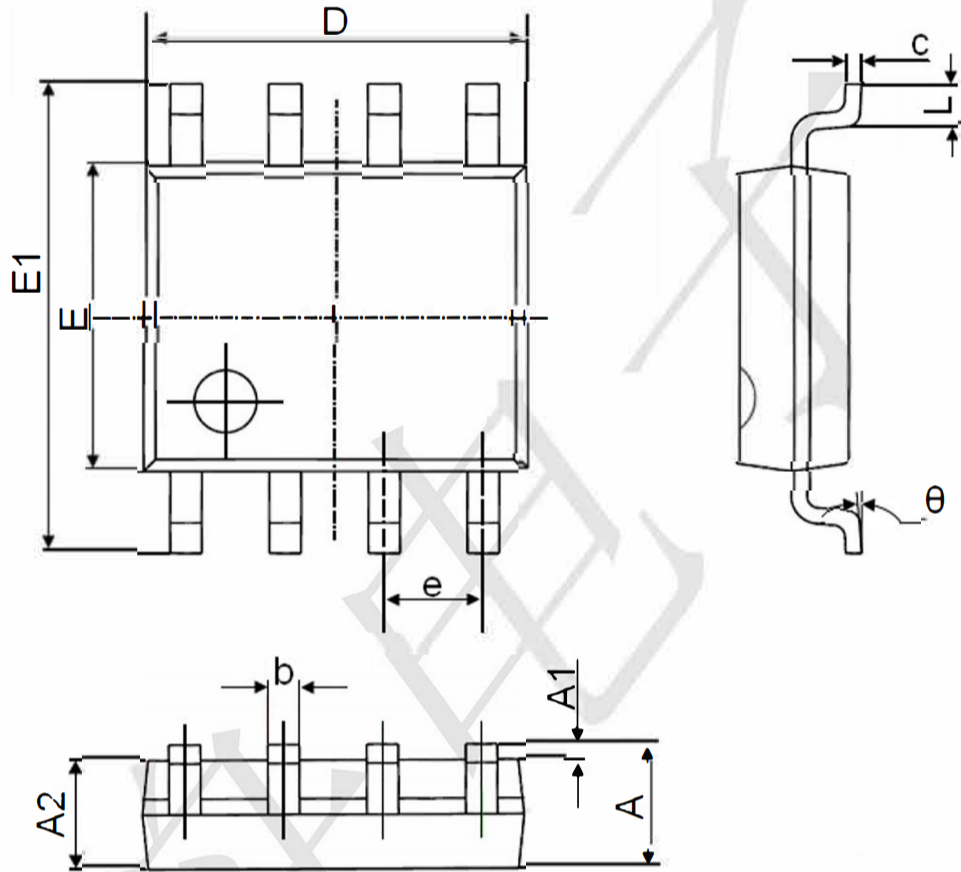
**Fig.5 Normalized Transient Impedance**



**Fig.6 Maximum Safe Operation Area**



SOP-8 Package Information



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°

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