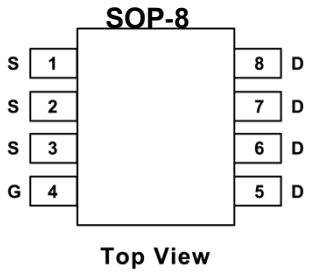
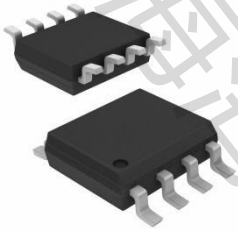
SQ9407EY-T1-GE3-HX

P-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY	
V_{DS}	-60V
$R_{DS(ON)}$ (at V_{GS}=-10V)	< 100mΩ
$R_{DS(ON)}$ (at V_{GS} = -4.5V)	< 130mΩ
I_D (at V_{GS}=-10V)	-4A





FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested

Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [A]	T_A=25°C	I_D	-4	A
	T_A=70°C		-3.1	
Pulsed Drain Current [B]		I_{DM}	-20	
Power Dissipation [A]	T_A=25°C	P_D	3.1	W
	T_A=70°C		2	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient [A]	t ≤ 10s	$R_{\theta JA}$	24	40	°C/W
Maximum Junction-to-Ambient [A]	Steady-State		54	75	°C/W
Maximum Junction-to-Lead [C]	Steady-State	$R_{\theta JL}$	21	30	°C/W

Electrical Characteristics (TJ=25°C unless otherwise noted)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Units**
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=-250μA, V_{GS}=0V	-60			V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=-48V, V_{GS}=0V			-1	μA
		T_J=55°C			-5	
IGSS	Gate-Body leakage current	V_{DS}=0V, V_{GS}= ±20V			±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-1	-2.1	-3	V
RDS(ON)	Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-4A		80	100	mΩ
		T_J=125°C		130		
		V_{GS}=-4.5V, I_D=-3A		102	130	mΩ
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-4A		10		S
V_{SD}	Diode Forward Voltage	I_S=-1A,V_{GS}=0V		-0.77	-1	V
IS	Maximum Body-Diode Continuous Current				-4	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V,		930	1120	pF
C_{oss}	Output Capacitance	V_{DS}=-30V,		85		pF
C_{rss}	Reverse Transfer Capacitance	f=1MHz		35		pF
R_g	Gate resistance	f=1MHz		7.2	9	Ω
SWITCHING PARAMETERS						
Q_g(10V)	Total Gate Charge	V_{GS}=-10V,		16	20	nC
Q_g(4.5V)	Total Gate Charge	V_{DS}=-30V,		8	10	nC
Q_{gs}	Gate Source Charge	I_D=-4A		2.5		nC
Q_{gd}	Gate Drain Charge			3.2		nC
tD(on)	Turn-On DelayTime	V_{GS}=-10V,		8		ns
t_r	Turn-On Rise Time	V_{DS}=-30V,		3.8		ns
tD(off)	Turn-Off DelayTime	R_L=7.5Ω,		31.5		ns
t_f	Turn-Off Fall Time			7.5		ns
trr	Body Diode Reverse Recovery Time	I_F=-4A, dI/dt=100A/μs		27	35	ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=-4A, dI/dt=100A/μs		32		nC

Notes:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B. Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

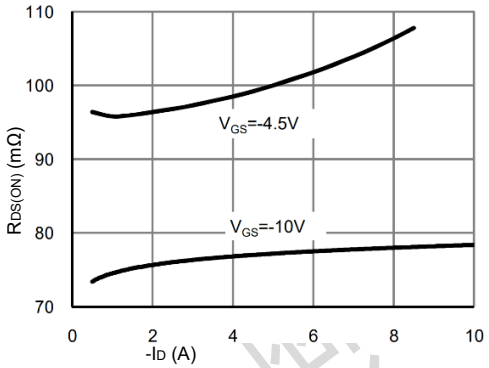


Fig 1. On-Resistance vs. Drain Current and Gate Voltage

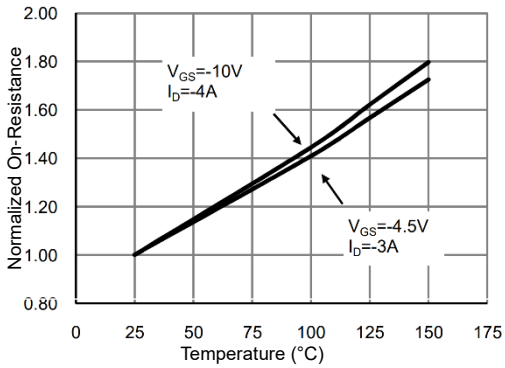


Fig 2. On-Resistance vs. Junction Temperature

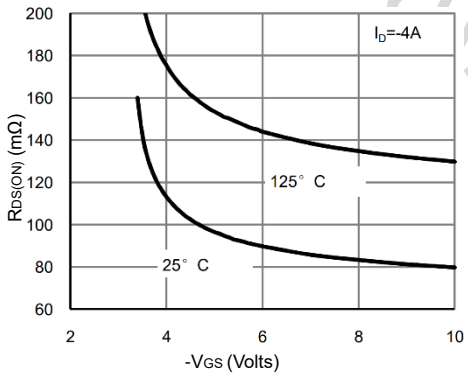


Fig 3. On-Resistance vs. Gate-Source Voltage

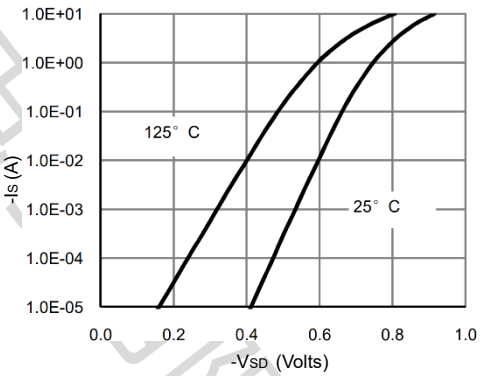


Fig 4. Body-Diode Characteristics

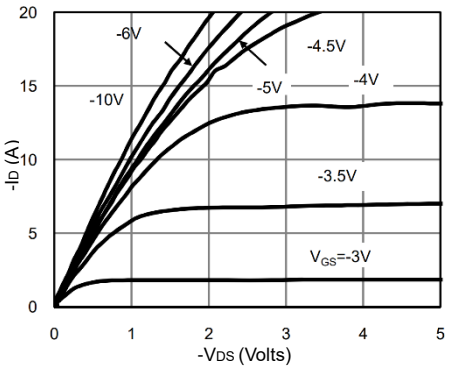


Fig 5. On-Region Characteristics

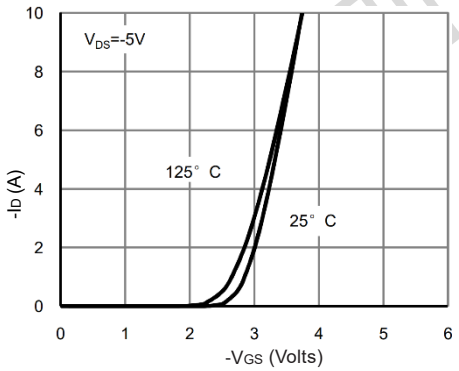


Fig 6. Transfer Characteristics

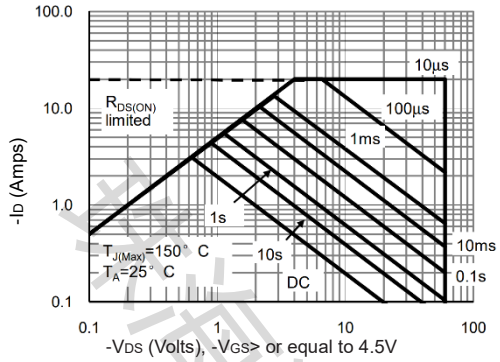


Fig 7. Maximum Forward Biased Safe Operating Area (Note E)

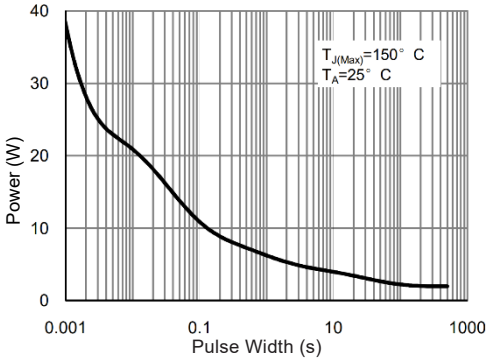


Fig 8. Single Pulse Power Rating Junction-to-Ambient (Note E)

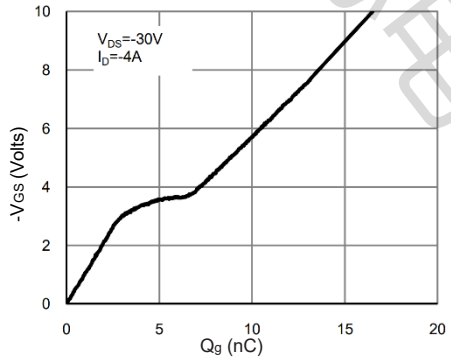


Fig 9. Gate-Charge Characteristics

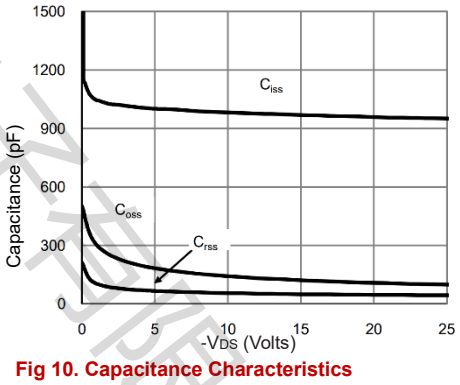


Fig 10. Capacitance Characteristics

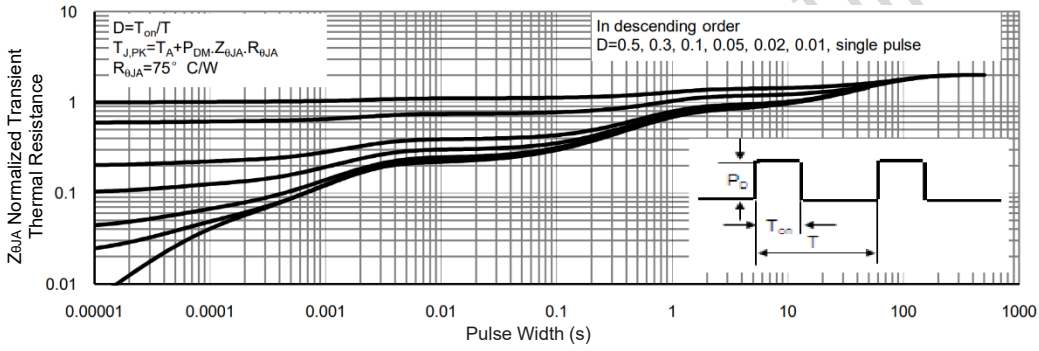
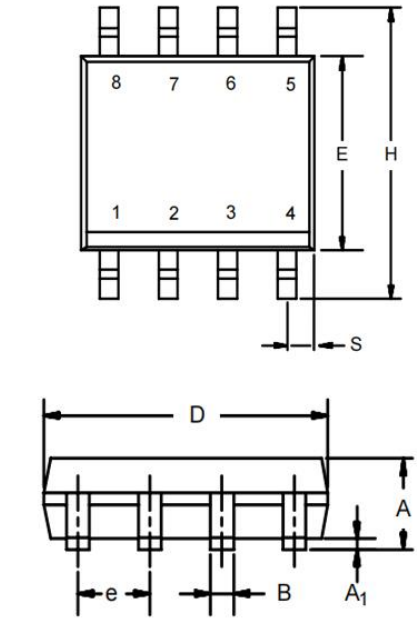
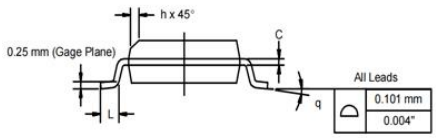


Fig 11. Normalized Maximum Transient Thermal Impedance

SOP-8 Package Outline

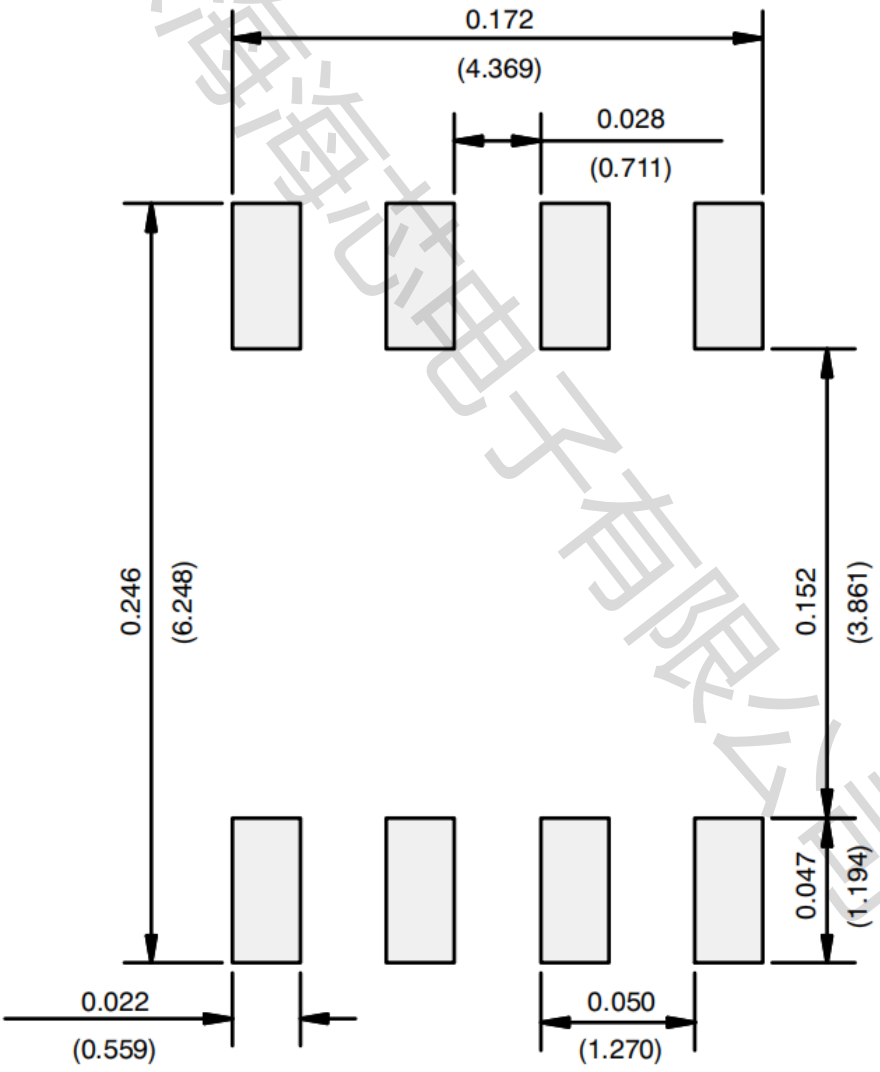
Dimensions are shown in millimeters (inches)





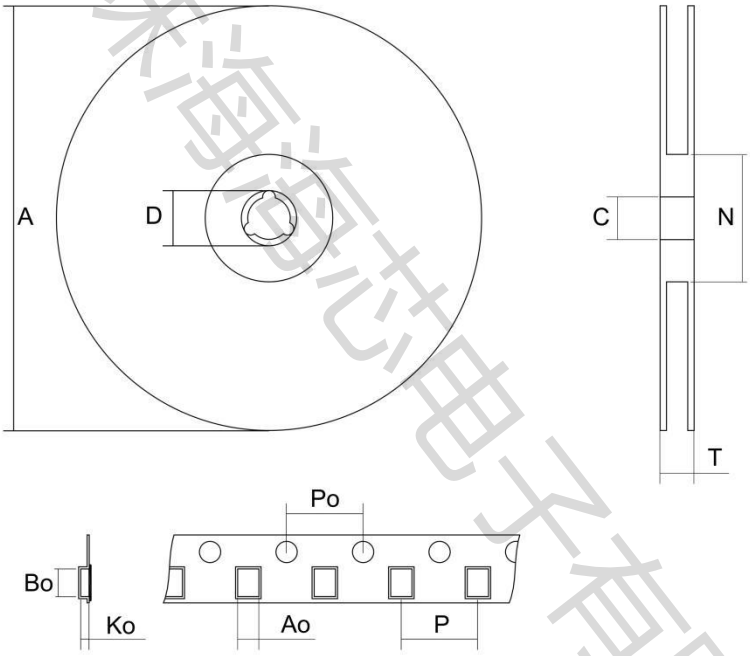
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A_1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

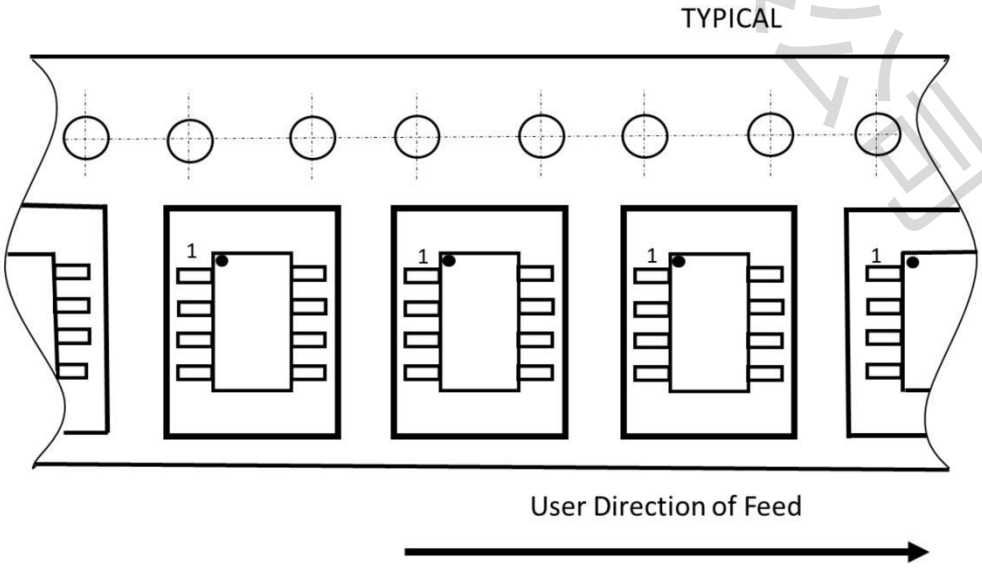


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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