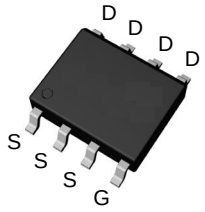
Features

- 30V/20 A,
  $R_{DS(ON)}$= 3 .2mΩ(typ.) @ V_{GS}= 10V
  $R_{DS(ON)}$= 5mΩ(typ.) @ V_{GS}= 4.5V
- Lower Q_g and Q_{gd} for high-speed switching
- Lower $R_{DS(ON)}$ to Minimize Conduction Losses
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

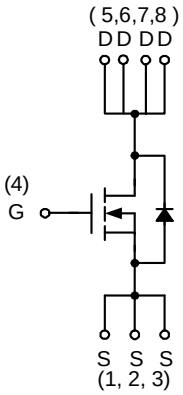
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



Top View of SOP8



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_A=25°C	2	A
I_D	Continuous Drain Current	T_A=25°C	20	
		T_A=70°C	15.4	
I_{DM}[a]	Pulsed Drain Current	T_A=25°C	37	
P_D	Maximum Power Dissipation	T_A=25°C	1.6	W
		T_A=70°C	1.02	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	t ≤ 10s[b]	32	°C/W
		Steady State[c]	78	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	Steady State	20	
I_{AS}[d]	Avalanche Current, Single pulse (L=0.1mH)		29	A
E_{AS}[d]	Avalanche Energy, Single pulse (L=0.1mH)		42	mJ

Note a: Pulse width limited by max. junction temperature.

b: t ≤10s and surface mounted on FR-4 board using 1in2 pad, 2 oz Cu.

c: Steady time = 999s and surface mounted on FR-4 board using 1in2 pad, 2 oz Cu.

d: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

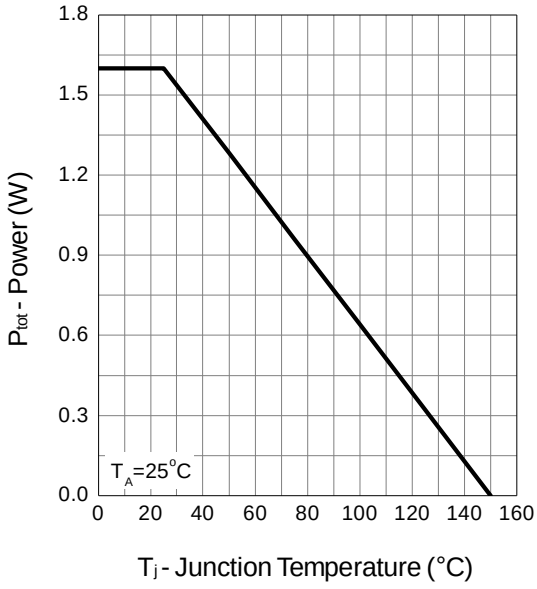
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
BV_{DSSt}	Drain-Source Breakdown Voltage (transient)	VGS=0V, $I_{D(aval)}$=29A T_{case}=25°C, $t_{transient}$=100ns	34	-	-	
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.4	1.7	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [e]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=13A	-	3.2	4.4	mΩ
		V_{GS}=4.5V, I_{DS}=9A	-	5.0	6.8	
Gfs	Forward Transconductance	V_{DS}=7.6 , I_D=8A	-	22	-	S
Diode Characteristics						
V_{SD} [e]	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V	-	0.78	1.1	V
t_{rr}	Reverse Recovery Time	I_{sd}=13A, dI_{SD}/dt=100A/μs V_{DD}=15V,	-	52	-	ns
Q_{rr}	Reverse Recovery Charge		-	30	-	nC
Dynamic Characteristics [f]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.1	2	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	1600	1990	pF
C_{oss}	Output Capacitance		-	900	-	
C_{rss}	Reverse Transfer Capacitance		-	65	85	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=1Ω	-	13.6	-	ns
t_r	Turn-on Rise Time		-	12.6	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	24.4	-	
t_f	Turn-off Fall Time		-	38.4	-	
Gate Charge Characteristics [f]						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_{DS}=13A	-	19.4	26	nC
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_{DS}=13A	-	9.4	-	
Q_{gs}	Gate-Source Charge		-	3.9	-	
Q_{gd}	Gate-Drain Charge		-	2.2	-	
Q_{gth}	Threshold Gate Charge		-	2.1	-	

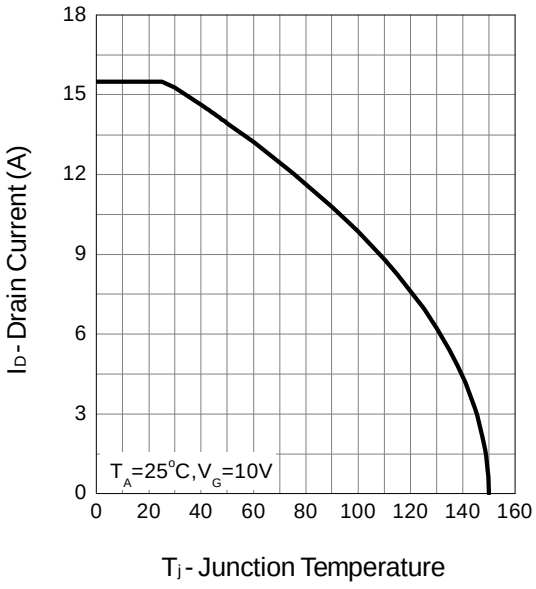
Note e: Pulse test. Pulse width ≤ 300 μs, duty cycle ≤ 2%.
f: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

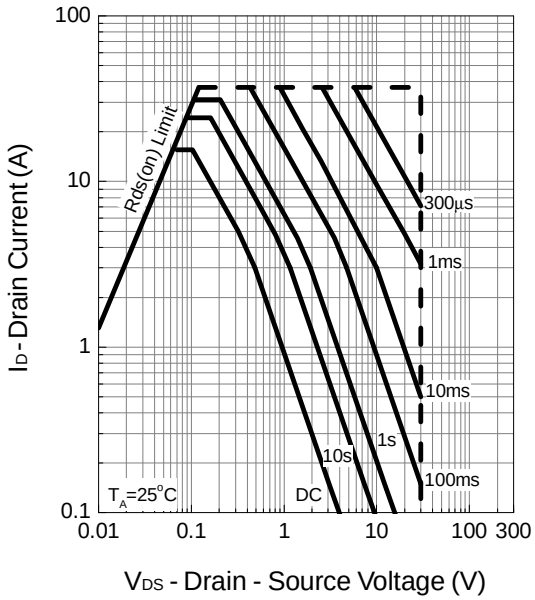
Power Dissipation



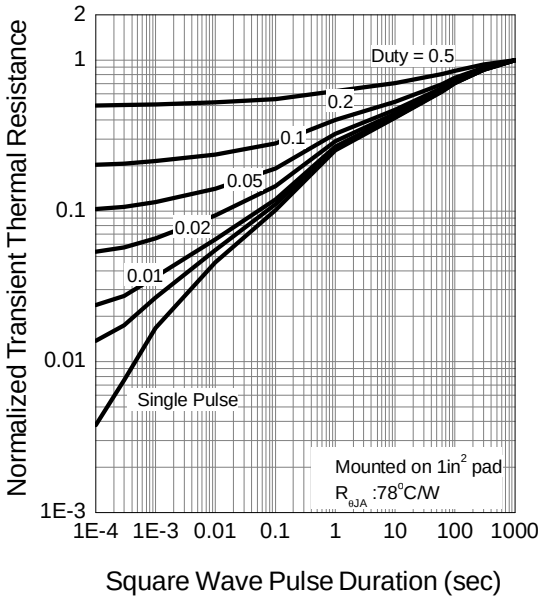
Drain Current



Safe Operation Area

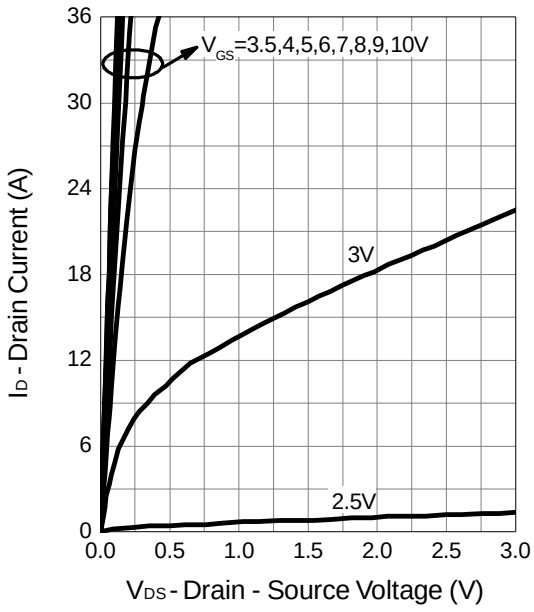


Thermal Transient Impedance

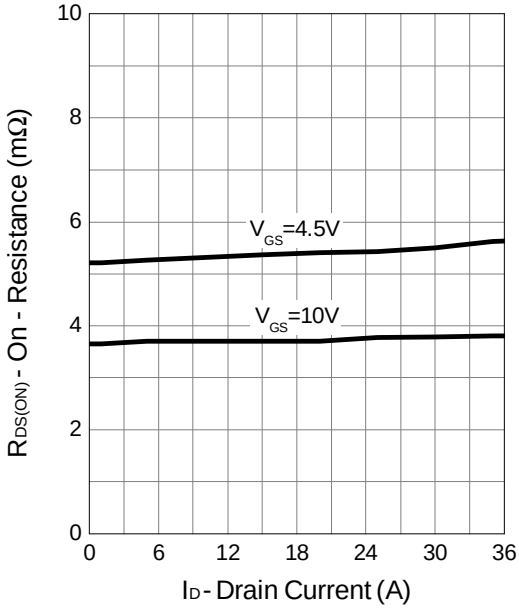


Typical Operating Characteristics (Cont.)

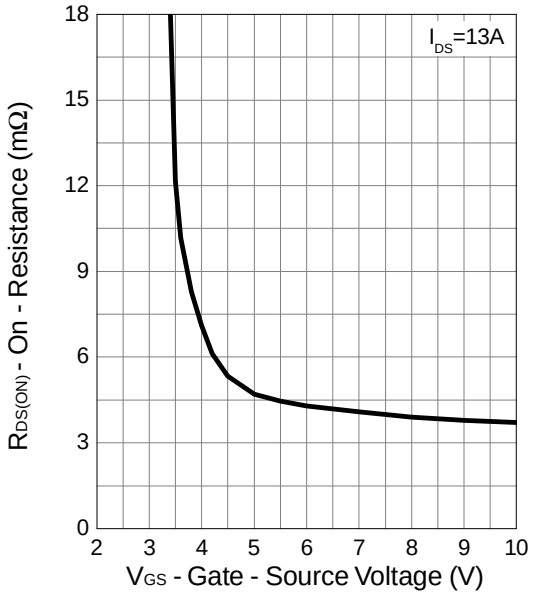
Output Characteristics



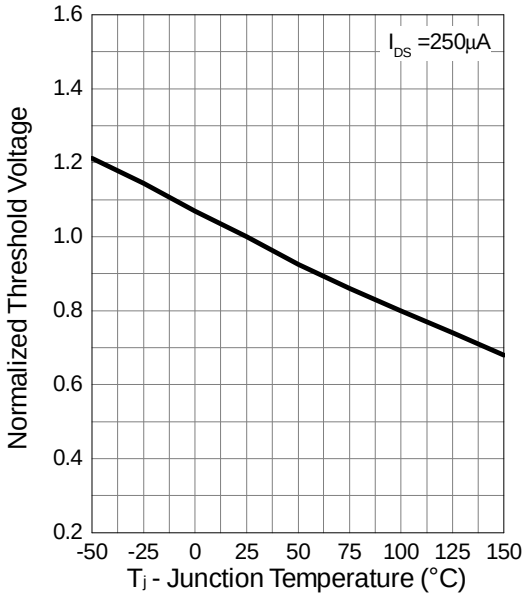
Drain-Source On Resistance



Gate-Source On Resistance

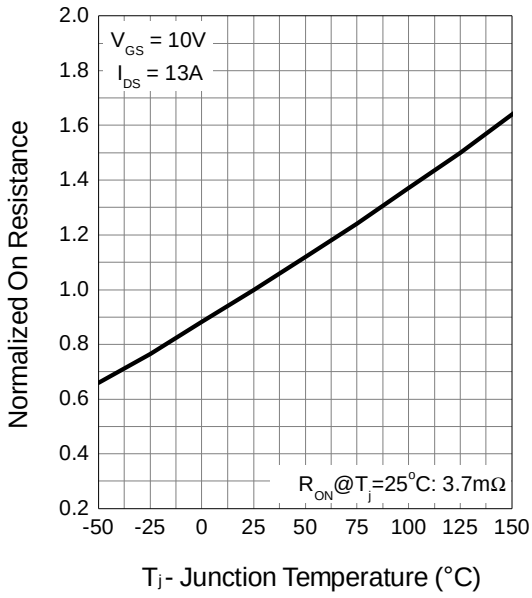


Gate Threshold Voltage

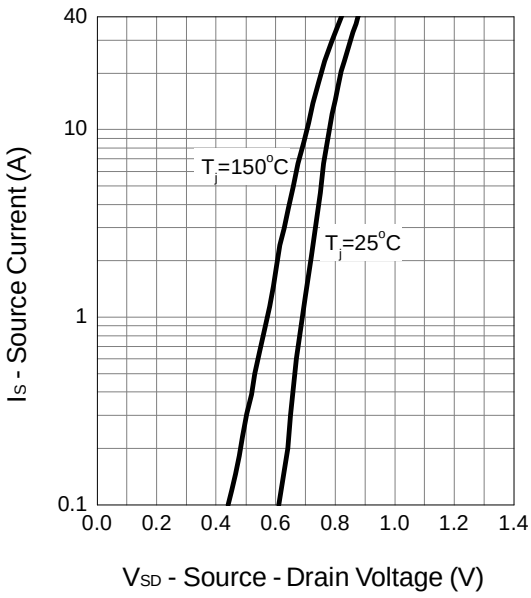


Typical Operating Characteristics (Cont.)

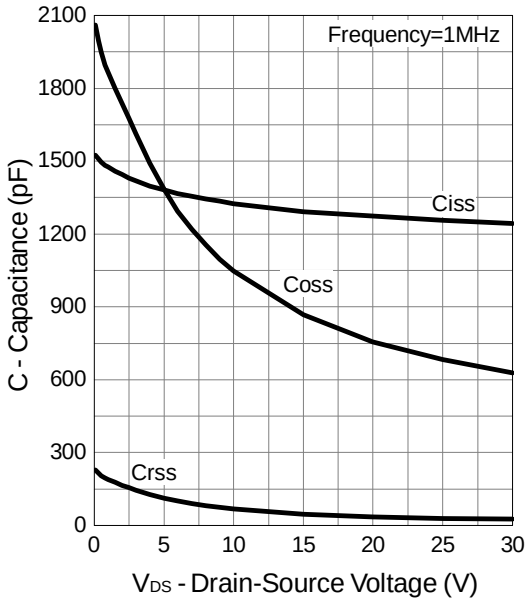
Drain-Source On Resistance



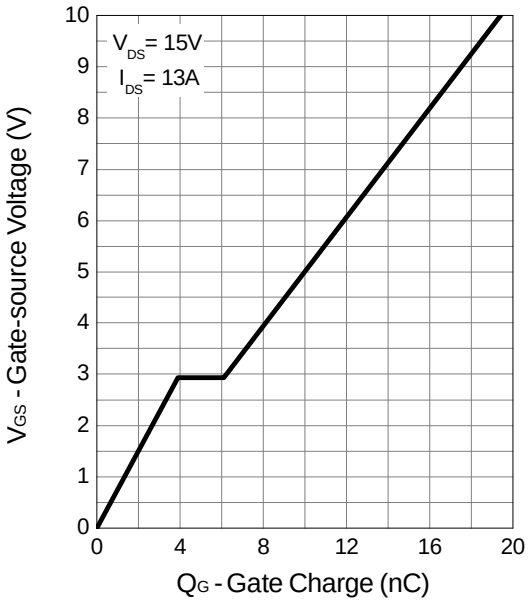
Source-Drain Diode Forward



Capacitance

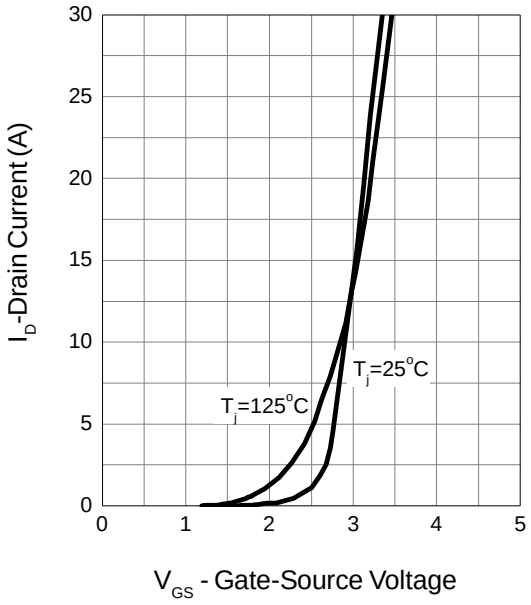


Gate Charge

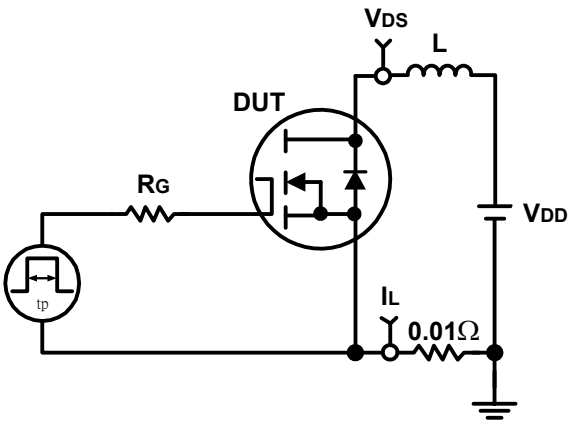


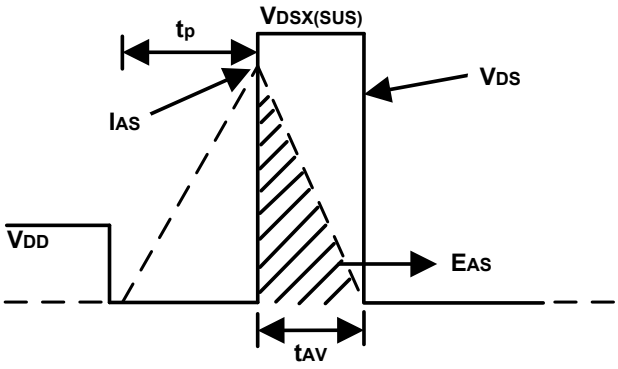
Typical Operating Characteristics (Cont.)

Transfer Characteristics

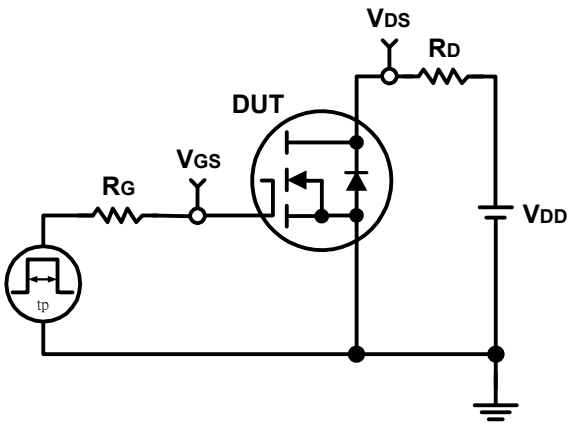


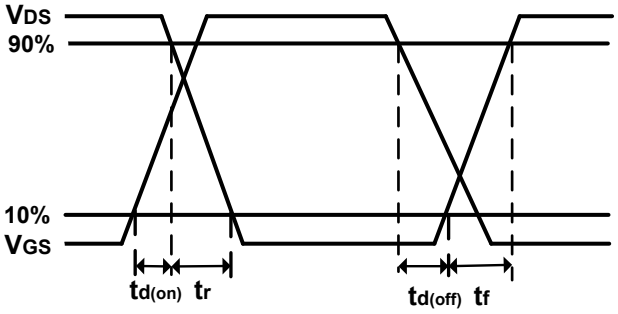
Avalanche Test Circuit and Waveforms



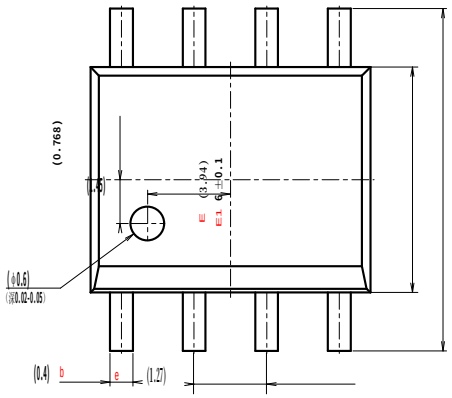


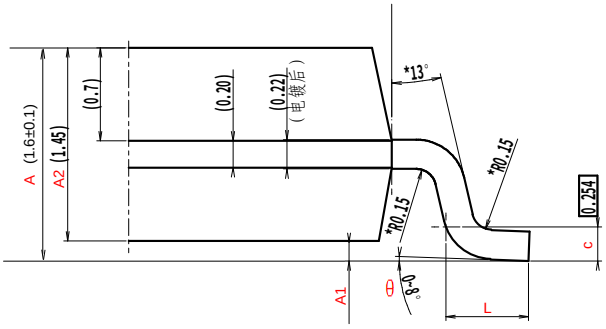
Switching Time Test Circuit and Waveforms

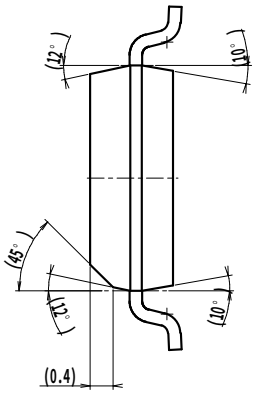


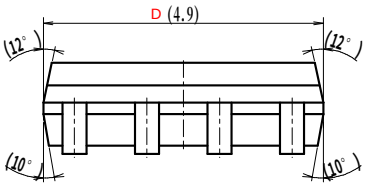


SOP8 PACKAGE OUTLINE









字符	Dimension millimeters		
	Min	Standard	Max
A	1.500	1.600	1.700
A1	0.040	0.080	0.150
A2	1.350	1.450	1.550
b	0.300	0.400	0.500
c	0.220	0.254	0.280
D	4.800	4.900	5.000
E	3.840	3.940	4.040
E1	5.900	6.000	6.100
e		1.27(BSC)	
L	0.400	0.550	0.700
θ	0°		8°