

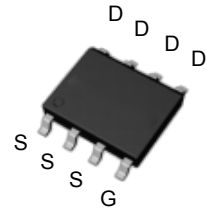
Features

- 30V/12A,
 $R_{DS(ON)} = 10m\Omega$ (typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 15m\Omega$ (typ.) @ $V_{GS}=4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

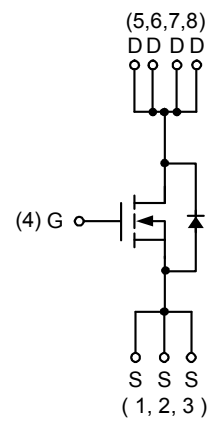
Applications

- 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				
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	12	A
I _D	Continuous Drain Current	T _A =25°C	12	A
		T _A =70°C	9	
I _{DM}	Pulsed Drain Current	T _A =25°C	36	
P _D	Maximum Power Dissipation	T _A =25°C	4.1	W
		T _A =70°C	2.6	
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	30	°C/W
		Steady State	60	
R _{θJL}	Thermal Resistance-Junction to Lead	Steady State	20	
I _{AS} ^a	Avalanche Current, Single pulse	L=0.1mH	19	A
E _{AS} ^a	Avalanche Energy, Single pulse	L=0.1mH	18	mJ

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

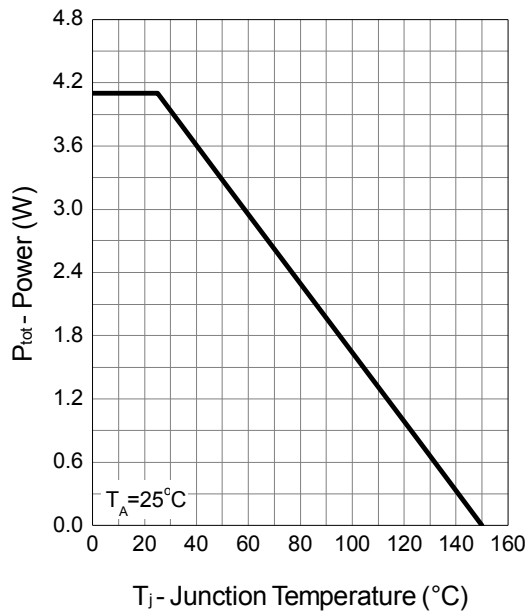
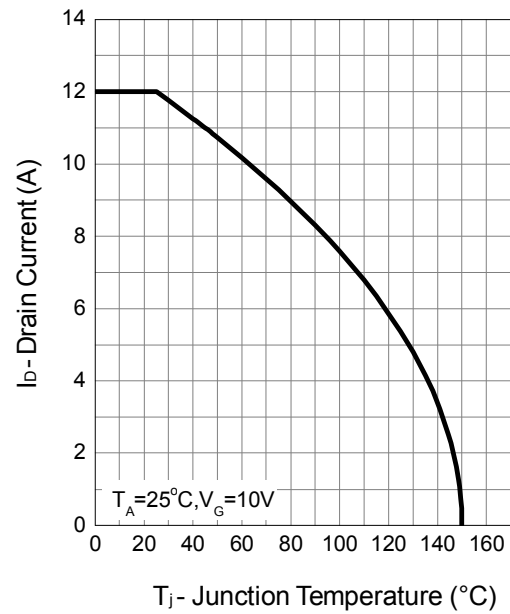
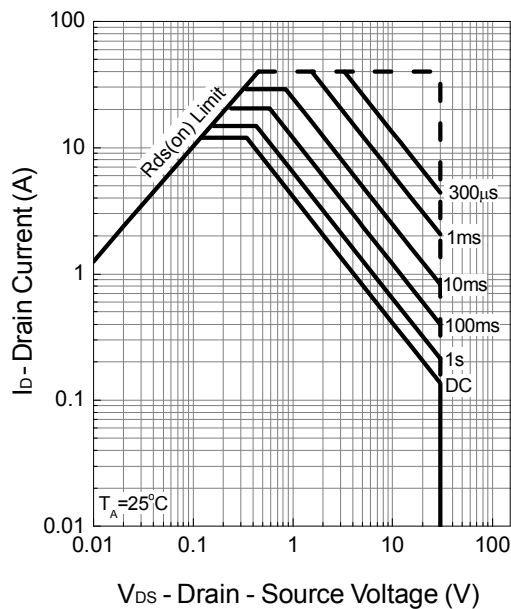
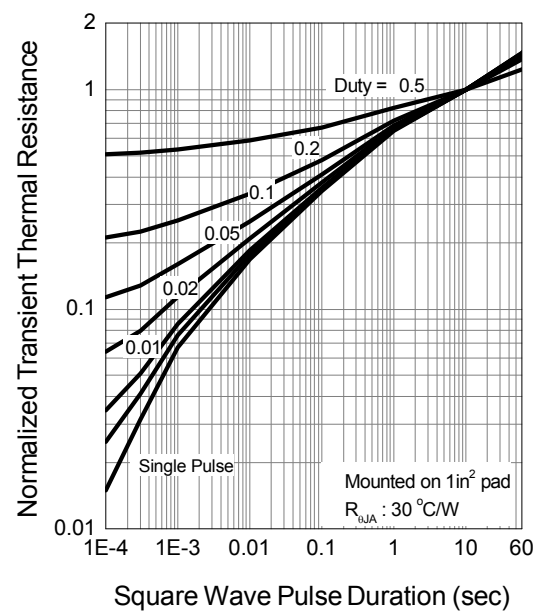
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =85°C	- -	- -	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =8.4A T _J =125°C V _{GS} =4.5V, I _{DS} =2A	- - -	10 17.6 15	14.5 - 20	mΩ
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =2A	-	6	-	S
Diode Characteristics						
V _{SD} ^b	Diode Forward Voltage	I _{SD} =6.7A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	V _{DD} =20V, I _{SD} =6.7A, dI _{SD} /dt= 100A/μs	-	11	-	ns
t _a	Charge Time		-	6.4	-	
t _b	Discharge Time		-	4.6	-	
Q _{rr}	Reverse Recovery Charge		-	4.2	-	nC
Dynamic Characteristics ^c						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	2.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	-	700	-	pF
C _{oss}	Output Capacitance		-	122	-	
C _{rss}	Reverse Transfer Capacitance		-	80	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _L =20Ω, I _{DS} =1A, V _{GEN} =10V, R _G =1Ω	-	10	-	ns
t _r	Turn-on Rise Time		-	10.6	-	
t _{d(OFF)}	Turn-off Delay Time		-	21.4	-	
t _f	Turn-off Fall Time		-	5.2	-	
Gate Charge Characteristics ^c						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _{DS} =8.4A	-	6.6	-	nC
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =8.4A	-	13.6	19	
Q _{gth}	Threshold Gate Charge		-	1.38	-	
Q _{gs}	Gate-Source Charge		-	2.7	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	

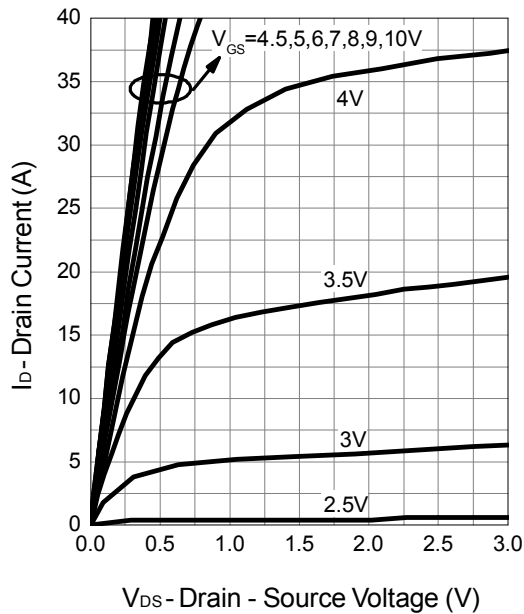
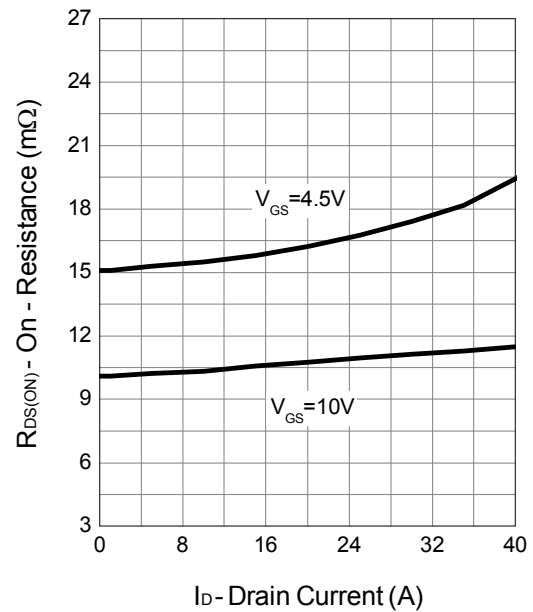
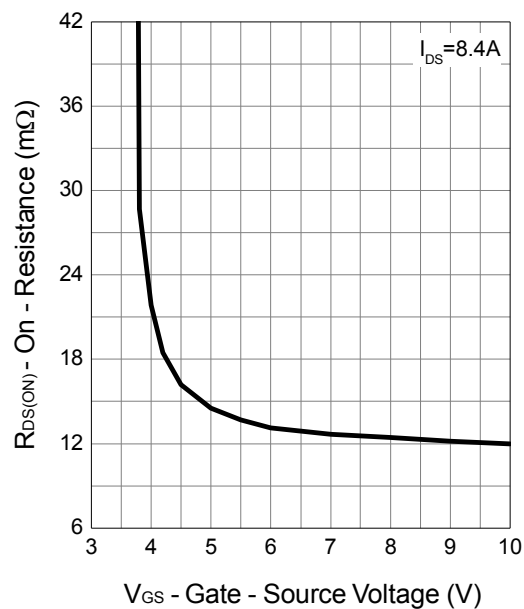
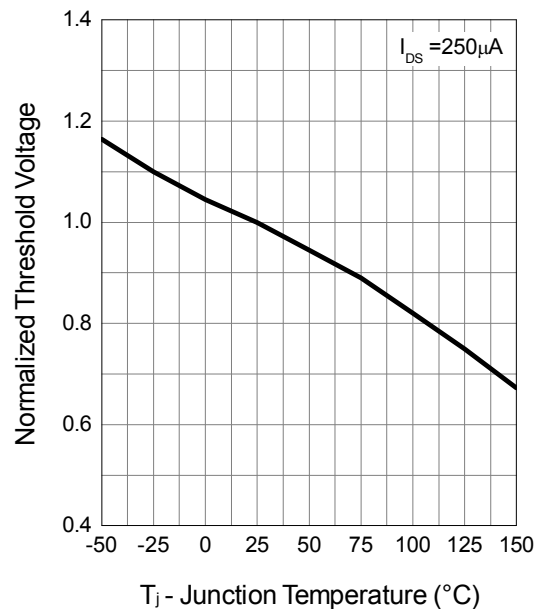
Note b : Pulse test ; pulse width≤300μs, duty cycle≤2%.

Note c : Guaranteed by design, not subject to production testing.

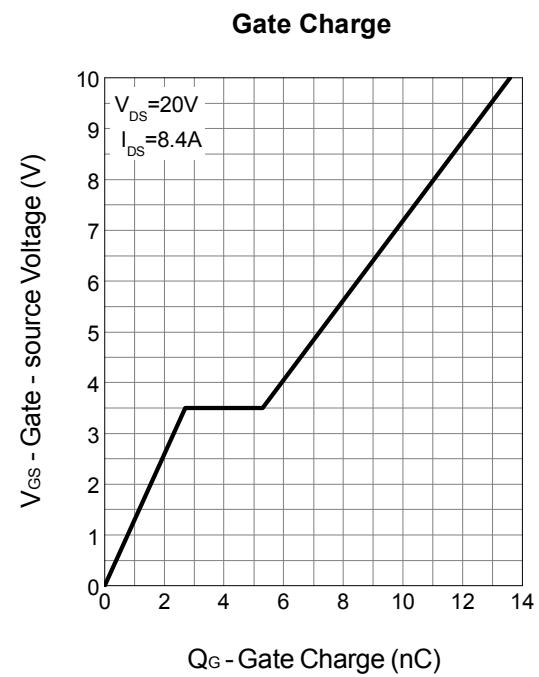
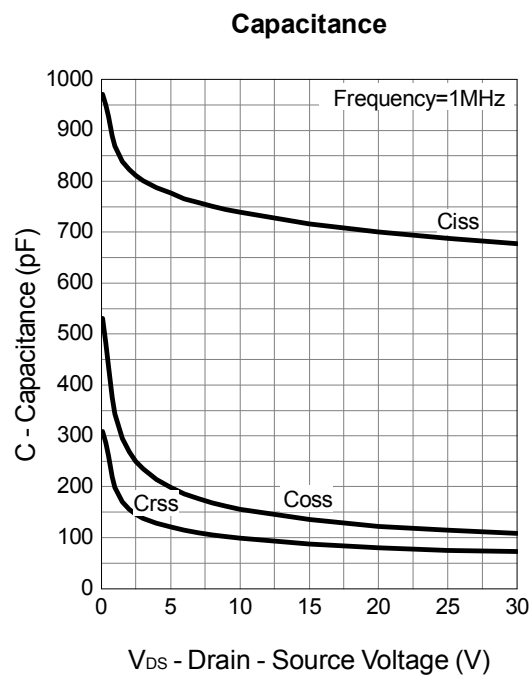
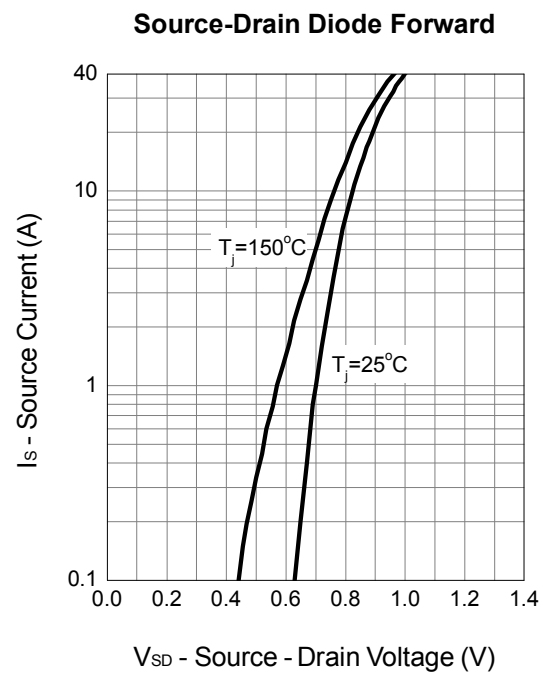
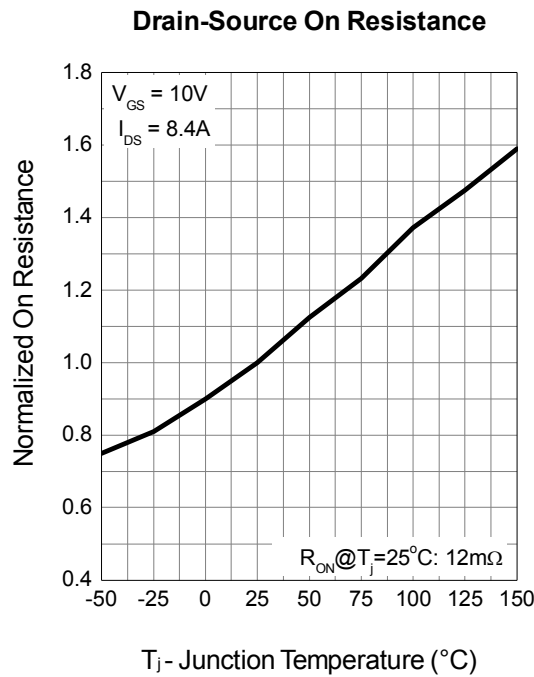
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


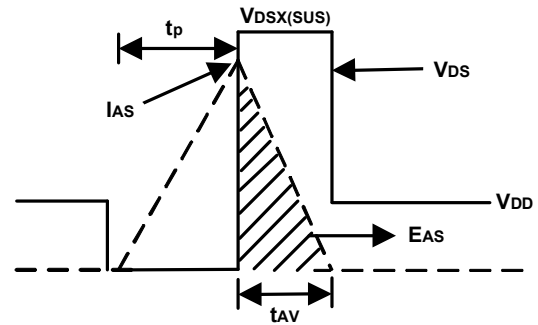
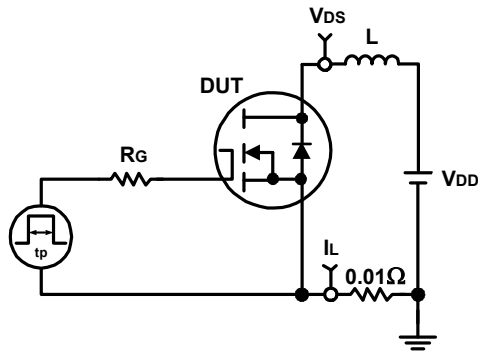
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


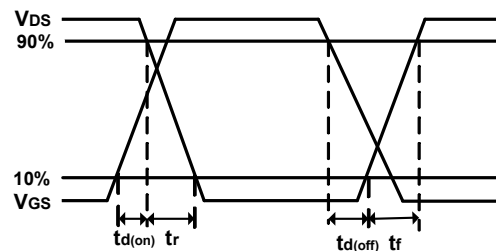
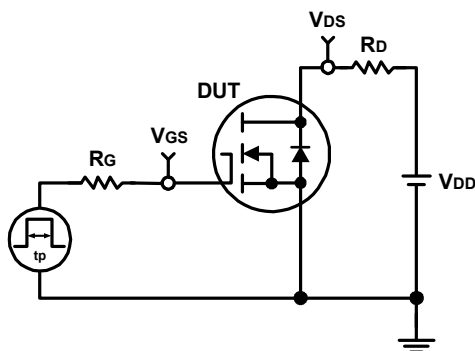
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms

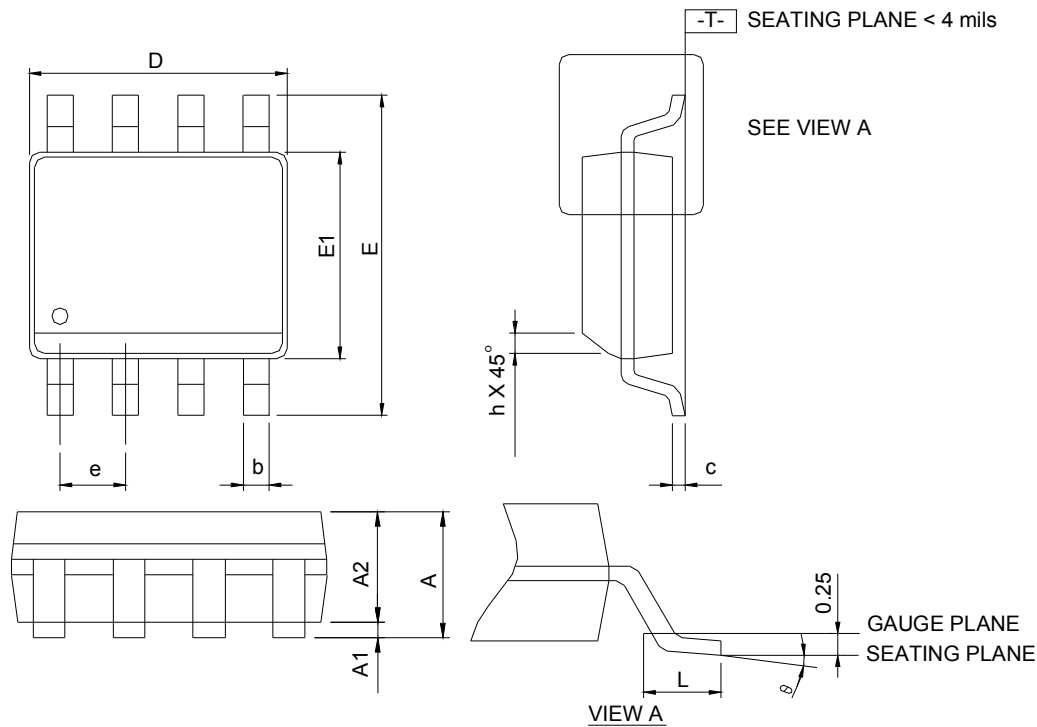


Switching Time Test Circuit and Waveforms



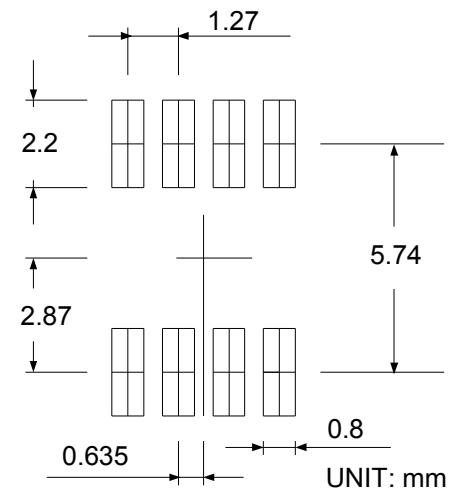
Package Information

SOP8



DIMENSIONS	SOP8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.75	-	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	-	0.049	-
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN



- Note: 1. Follow JEDEC MS-012 AA.
 2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side.
 3. Dimension "E" does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.