

Features

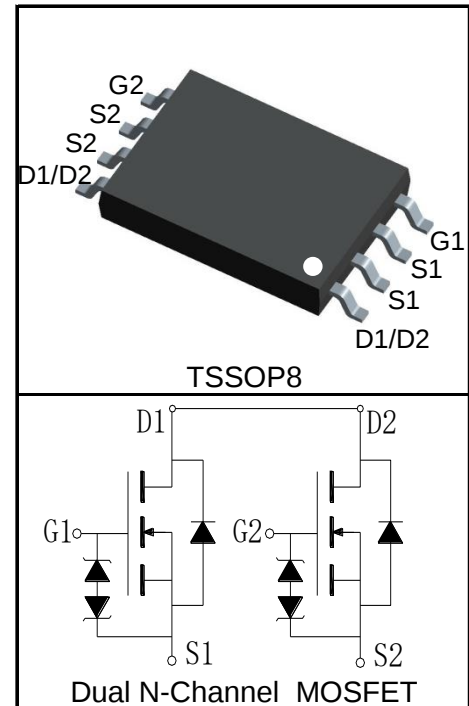
- 20V/11A,
 $R_{DS(ON)} = 8m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)} = 8.5m\Omega(Typ.)@V_{GS}=3.8V$
 $R_{DS(ON)} = 9m\Omega(Typ.)@V_{GS}=3.1V$
 $R_{DS(ON)} = 9.8m\Omega(Typ.)@V_{GS}=2.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- ESD Protected (HBM>2000V)

Applications

- Power Management
- Battery Protection



Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±10	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	1.9	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _A =25°C	40	A
I _D ^②	Continuous Drain Current(V _{GS} =4.5V)	T _A =25°C	11	A
		T _A =70°C	8.8	
P _D	Maximum Power Dissipation	T _A =25°C	1.5	W
		T _A =70°C	1	
R _{θJC}	Thermal Resistance-Junction to Case		-	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		83.5	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		TBD	mJ

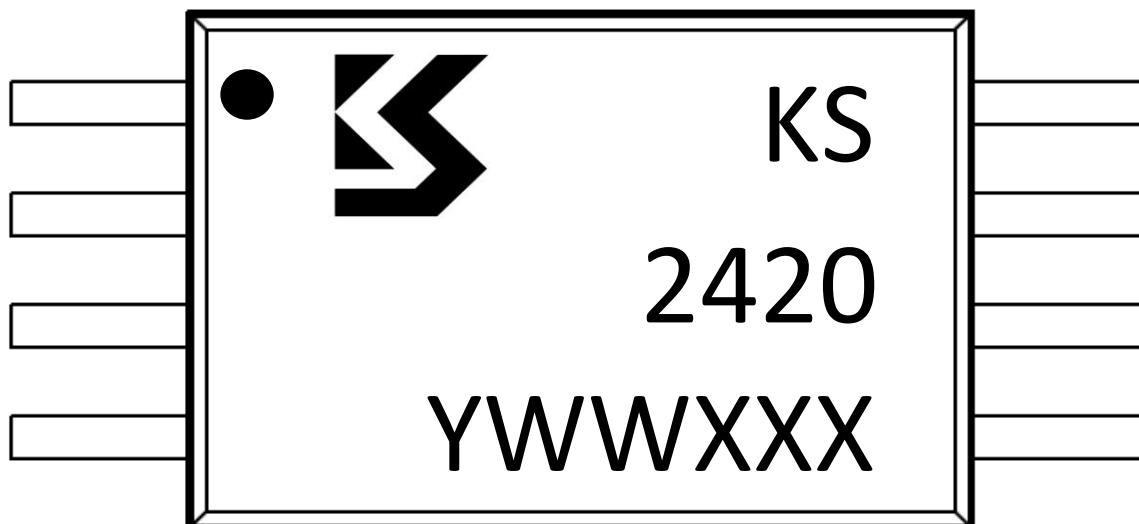
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS2420BA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
			T _J =125°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.7	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±8V, V _{DS} =0V			±10	μA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =5A		8	9.5	mΩ
		V _{GS} =3.8V, I _{DS} =4A		8.5	10	mΩ
		V _{GS} =3.1V, I _{DS} =4A		9	11	mΩ
		V _{GS} =2.5V, I _{DS} =4A		9.8	12	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =5A, V _{GS} =0V		0.78	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =5A, dI _{SD} /dt=100A/μs		21		ns
Q _{rr}	Reverse Recovery Charge			15		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz		1350		pF
C _{oss}	Output Capacitance			225		
C _{rss}	Reverse Transfer Capacitance			175		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, I _{DS} =5A, V _{GEN} =4.5V, R _G =6Ω		6		ns
t _r	Turn-on Rise Time			11		
t _{d(OFF)}	Turn-off Delay Time			32		
t _f	Turn-off Fall Time			12		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =5A		18		nC
Q _{gs}	Gate-Source Charge			7		
Q _{gd}	Gate-Drain Charge			6		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 10A.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} . Starting $T_J = 25^{\circ}\text{C}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS2420BA	TSSOP8	Tape&Reel	3000	13"	12mm

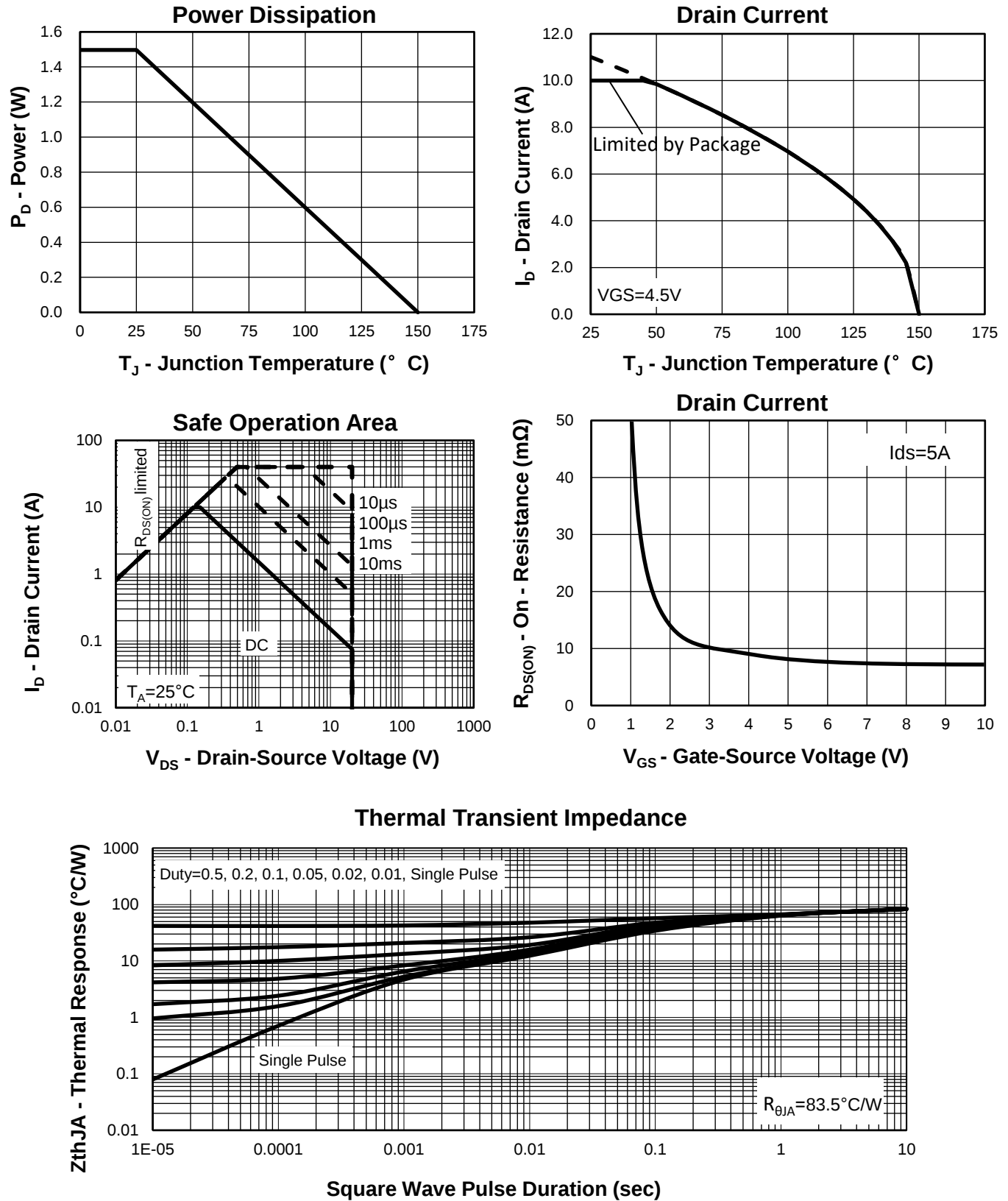


Y =Year,2017-A,2018-B,etc.

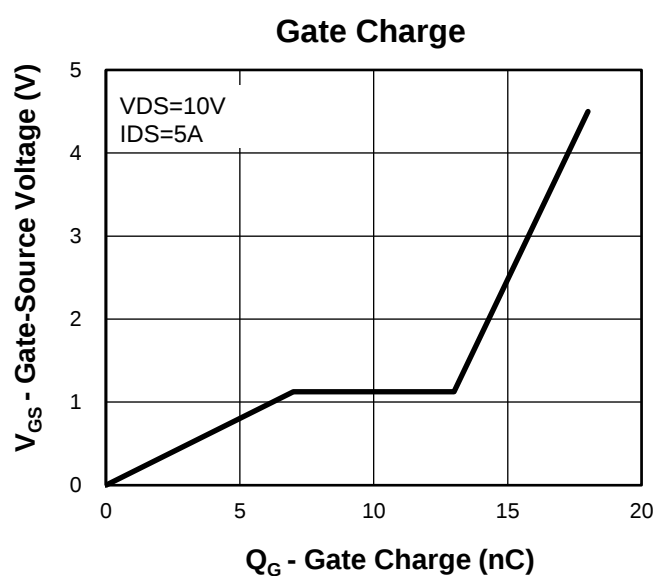
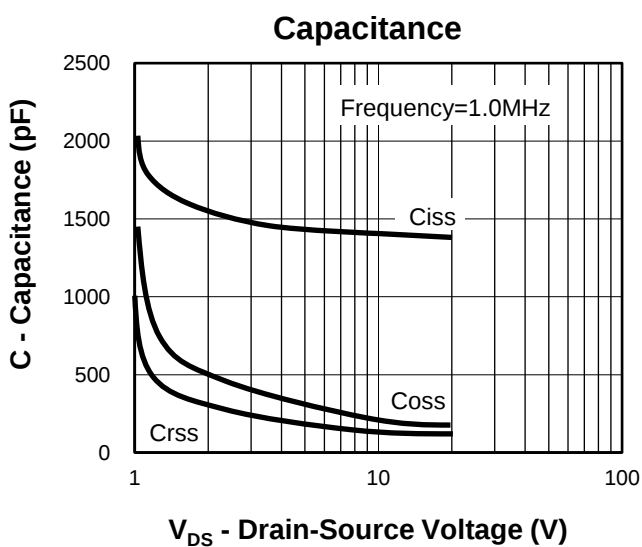
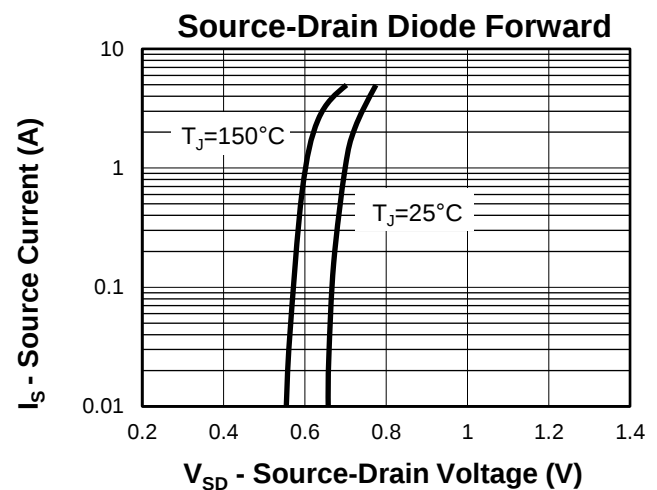
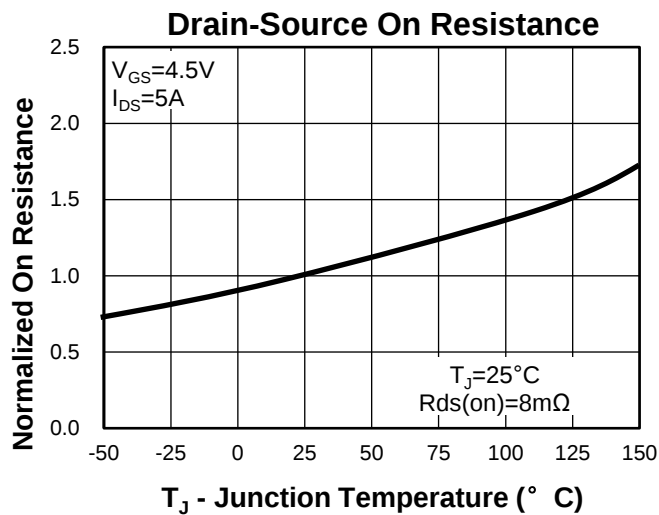
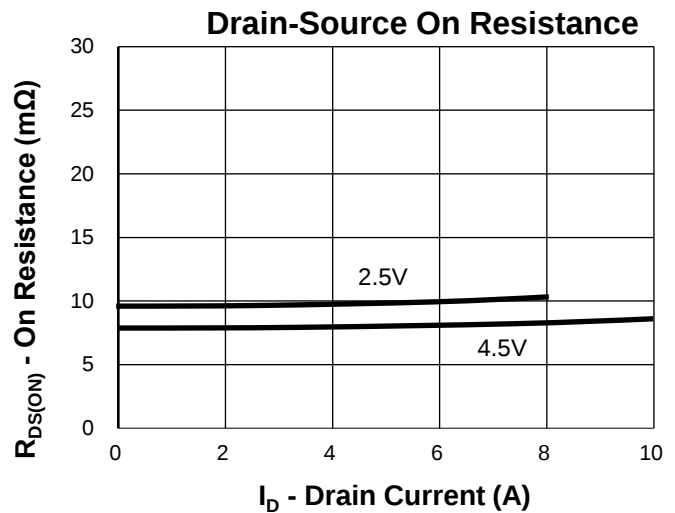
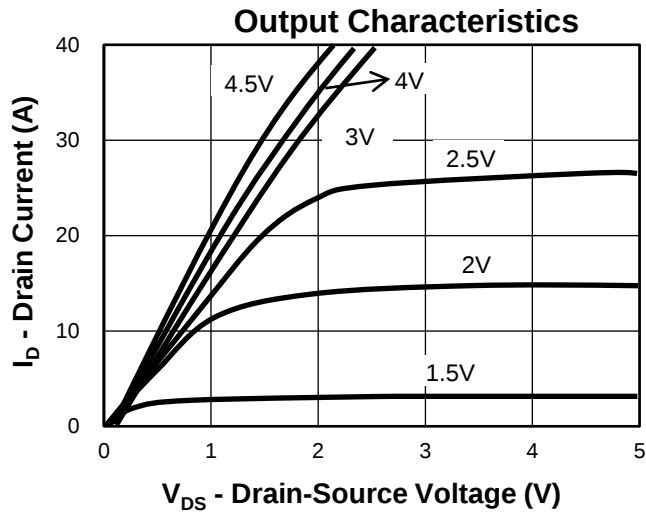
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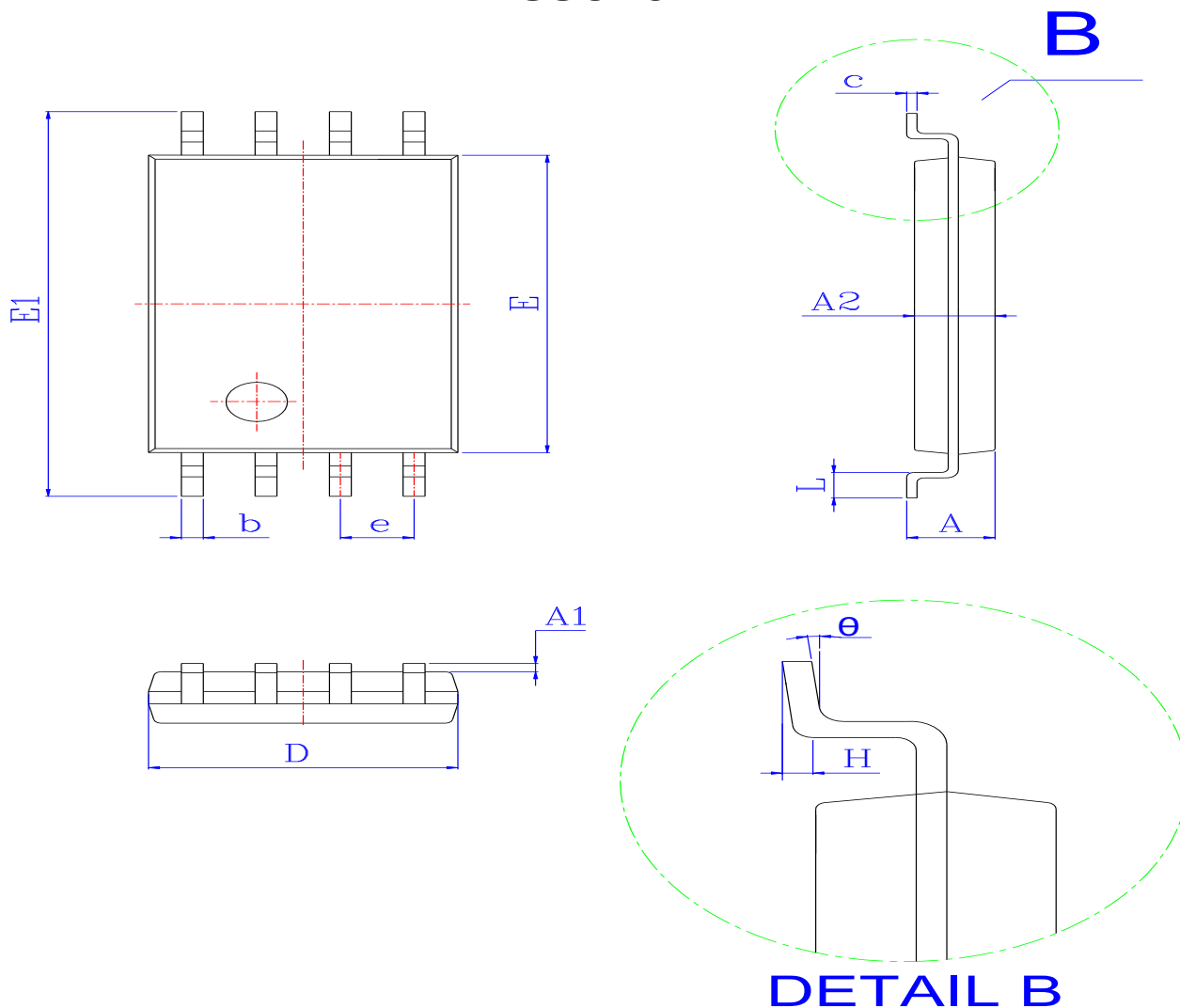
XXX =Lot number.

Typical Characteristics



Typical Characteristics



Package Information
TSSOP8


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
D	2.87	3.00	3.10	0.113	0.118	0.122
E	4.30	4.40	4.50	0.169	0.173	0.177
b	0.17	0.25	0.30	0.007	0.010	0.012
c	0.09	0.15	0.20	0.004	0.006	0.008
E1	6.20	6.40	6.60	0.244	0.252	0.260
A	1.00	1.10	1.20	0.039	0.043	0.047
A1	0.05	0.10	0.18	0.002	0.004	0.007
A2	0.80	1.00	1.10	0.031	0.039	0.043
e	0.65 (BSC)			0.026 (BSC)		
L	0.40	0.60	0.80	0.016	0.024	0.031
H	0.25 (TYP)			0.01 (TYP)		
θ	0°	4°	8°	0°	4°	8°

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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