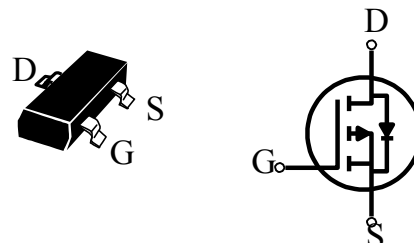


PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(on)} MAX.	I _D
-60V	190mΩ@V _{GS} =-10V	-3.1A
	240mΩ@V _{GS} =-4.5V	

SOT-23
PACKAGE

FEATURES

- Super high dense cell trench design for low RDS(on).
- Rugged and reliable
- Surface Mount package.

MECHANICAL DATA

- Case : Molded plastic,SOT-23
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame retardant

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous @TA=25°C (Note 1)	I _D	-3.1	A
-Pulsed (Note 2)	I _{DM}	-12.4	
Maximum Power Dissipation (Note 1)	P _D	TA=25°C 1.25	W
		TA=75°C 0.75	
Operating Junction and Storage Temperature Range	T _J ,T _{STG}	- 55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 1)	R _{thJA}	100	°C/W
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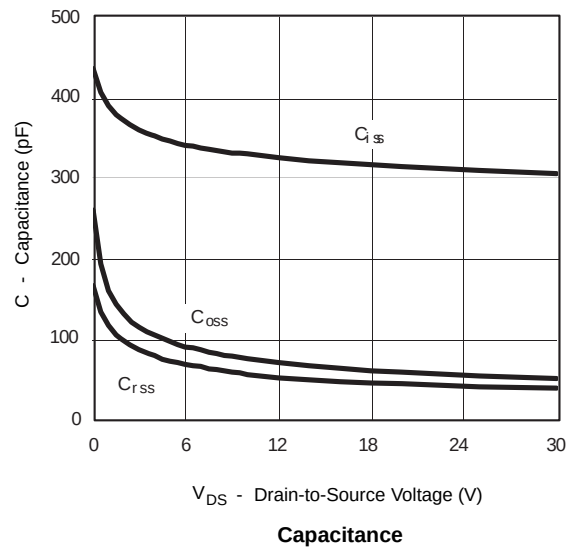
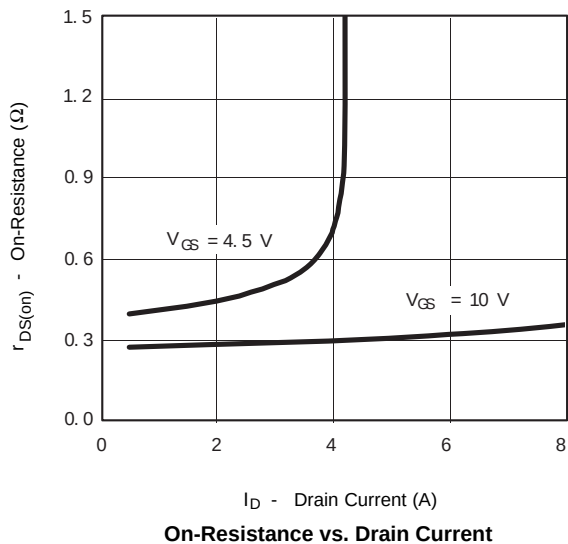
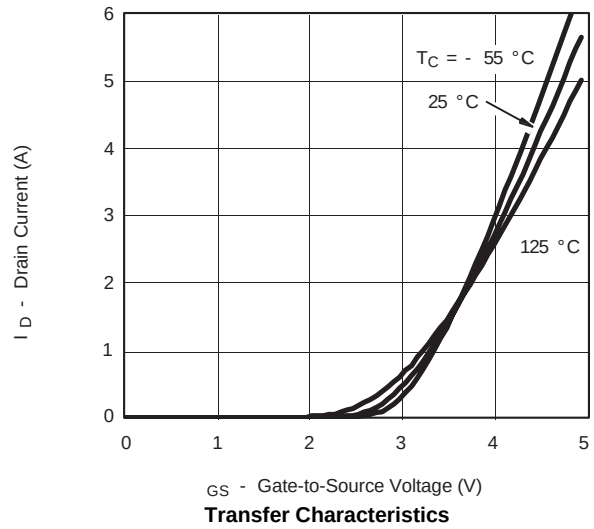
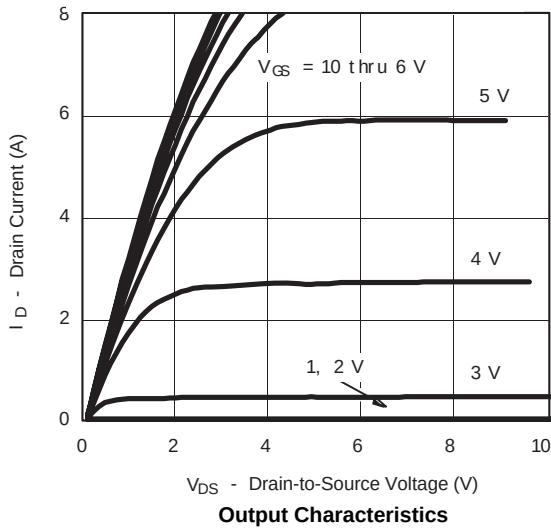
Note:

1. Surface Mounted on FR4 Board , t ≤ 10sec .
2. Pulse width limited by maximum junction temperature

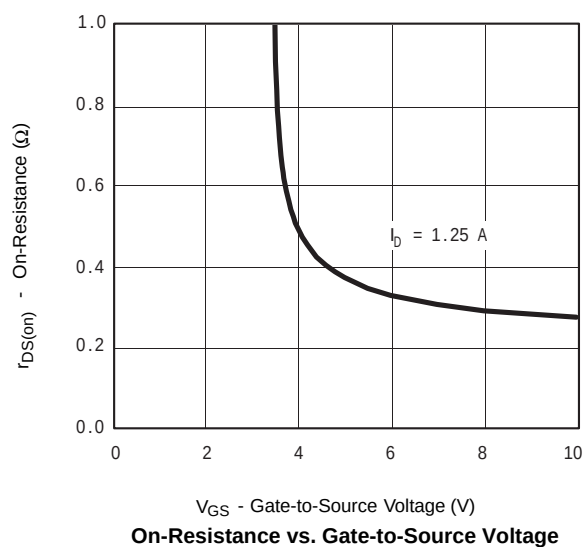
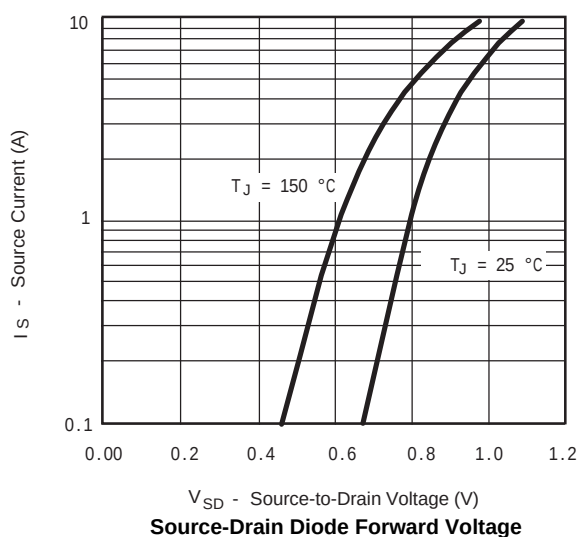
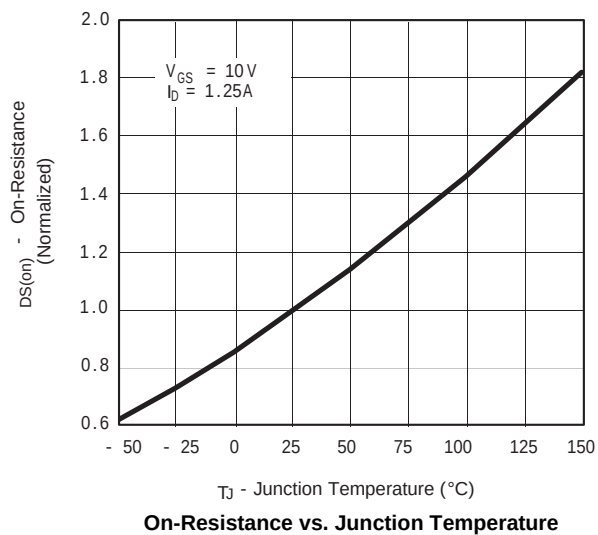
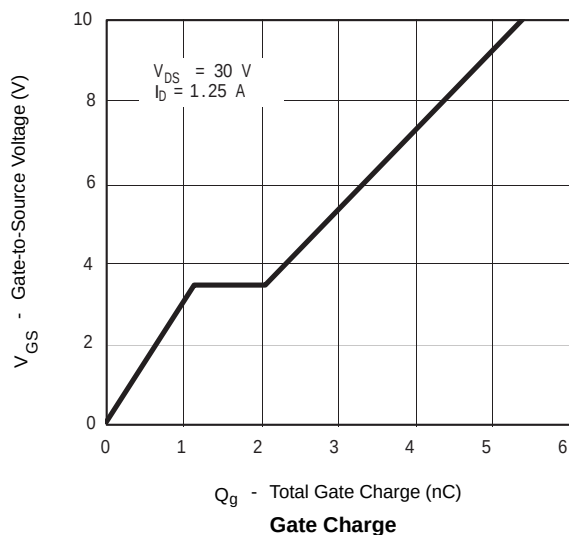
ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)

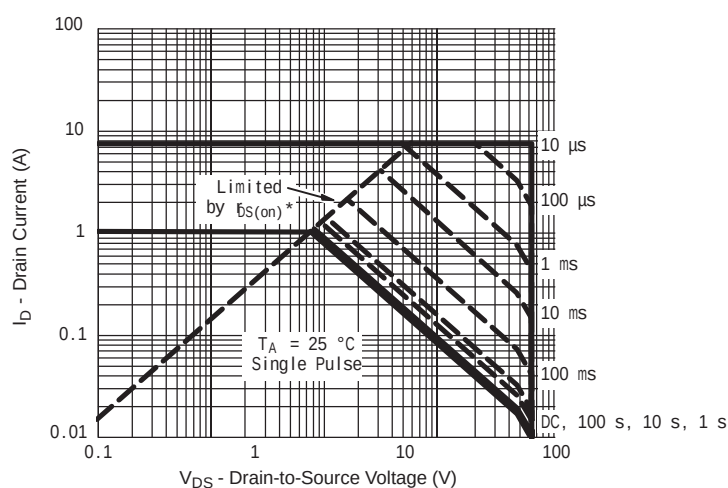
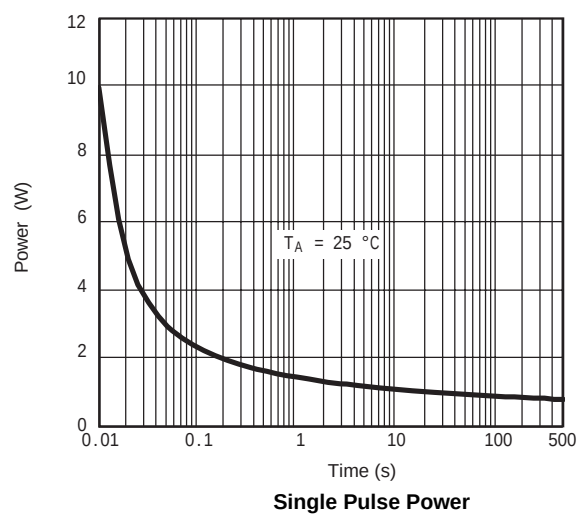
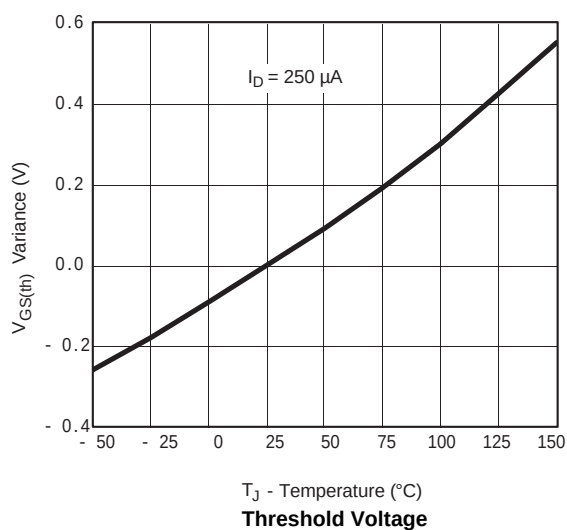
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V , I _D = -250uA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -48V , V _{GS} = 0V			-1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V , V _{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = VGS , I _D = -250uA	-1	-1.6	-3	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = -10V , I _D = -3.1A		150	190	mΩ
		V _{GS} = -4.5V , I _D = -1.5A		200	240	mΩ
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C _{ISS}	VDS = -30V , VGS = 0V f = 1.0MHz		785		pF
Output Capacitance	C _{OSS}			285		pF
Reverse Transfer Capacitance	C _{RSS}			112		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	td _(ON)	V _{DD} = -6V , I _D = -1A V _{GEN} = -4.5V R _{GEN} = 6 ohm , R _L = 6 ohm		10.5		ns
Rise Time	tr			15.6		ns
Turn-Off Delay Time	td _(OFF)			19		ns
Fall Time	tf			8		ns
Total Gate Charge	Qg	V _{DS} = -6V I _D = -2.8A V _{GS} = -4.5V		8.2		nC
Gate-Source Charge	Qgs			5.8		nC
Gate-Drain Charge	Qgd			3.7		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Continuous Current (Note 1)	I _S				-0.75	A
Diode Forward Voltage (Note 4)	V _{SD}	V _{GS} = 0V , I _S = -0.75A			-1.2	V

Note:
 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
 4. Guaranteed by design, not subject to production

**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted

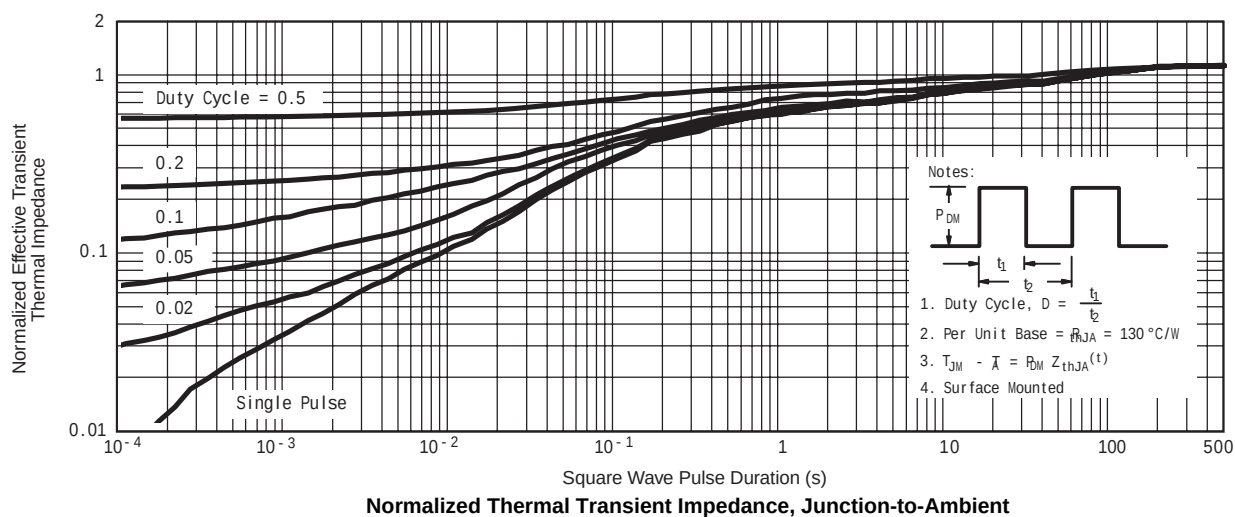
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





* $V_{GS} >$ minimum V_{GS} at which $r_{DS(on)}$ is specified

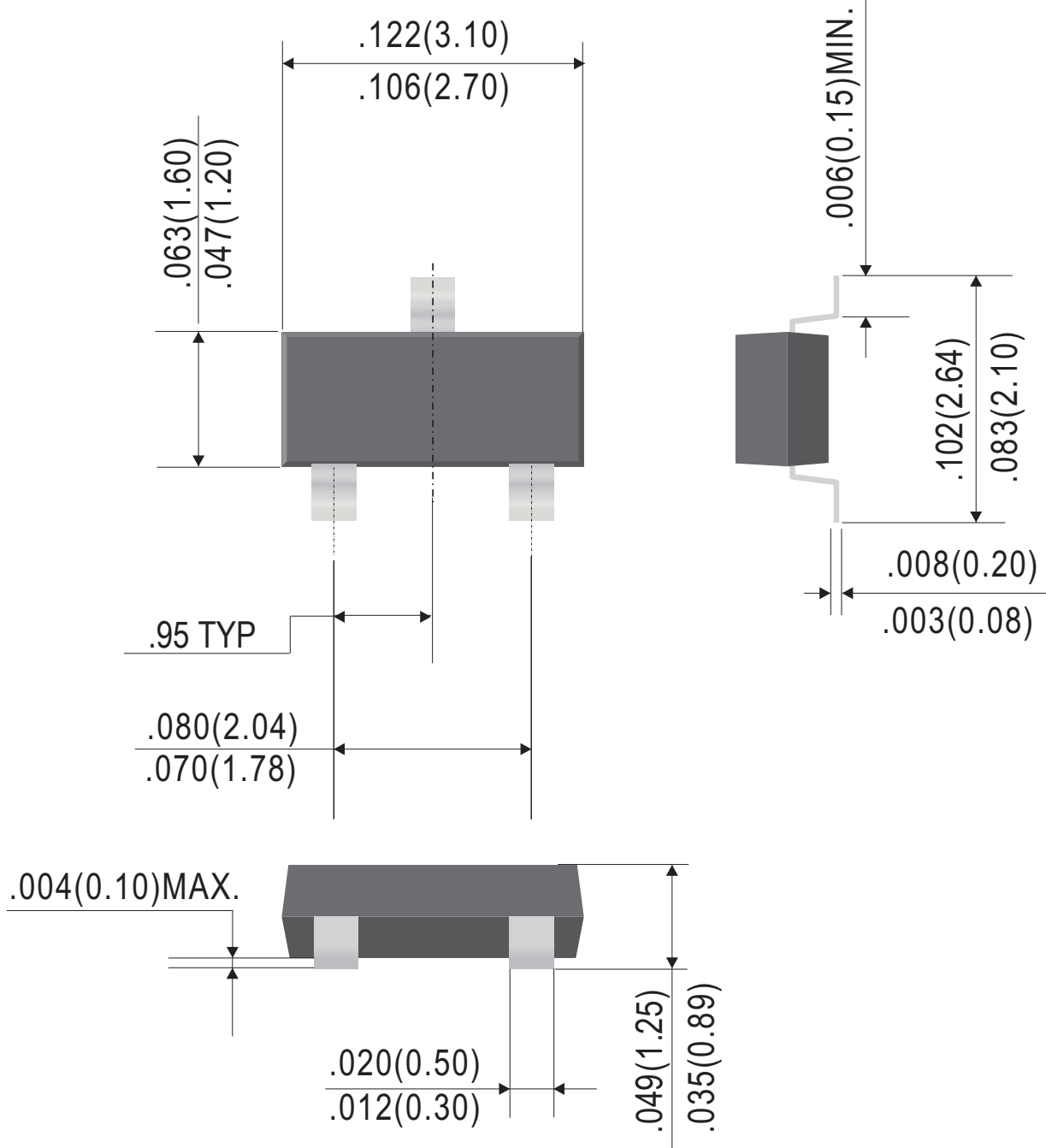
Safe Operating Area, Junction-to-Ambient





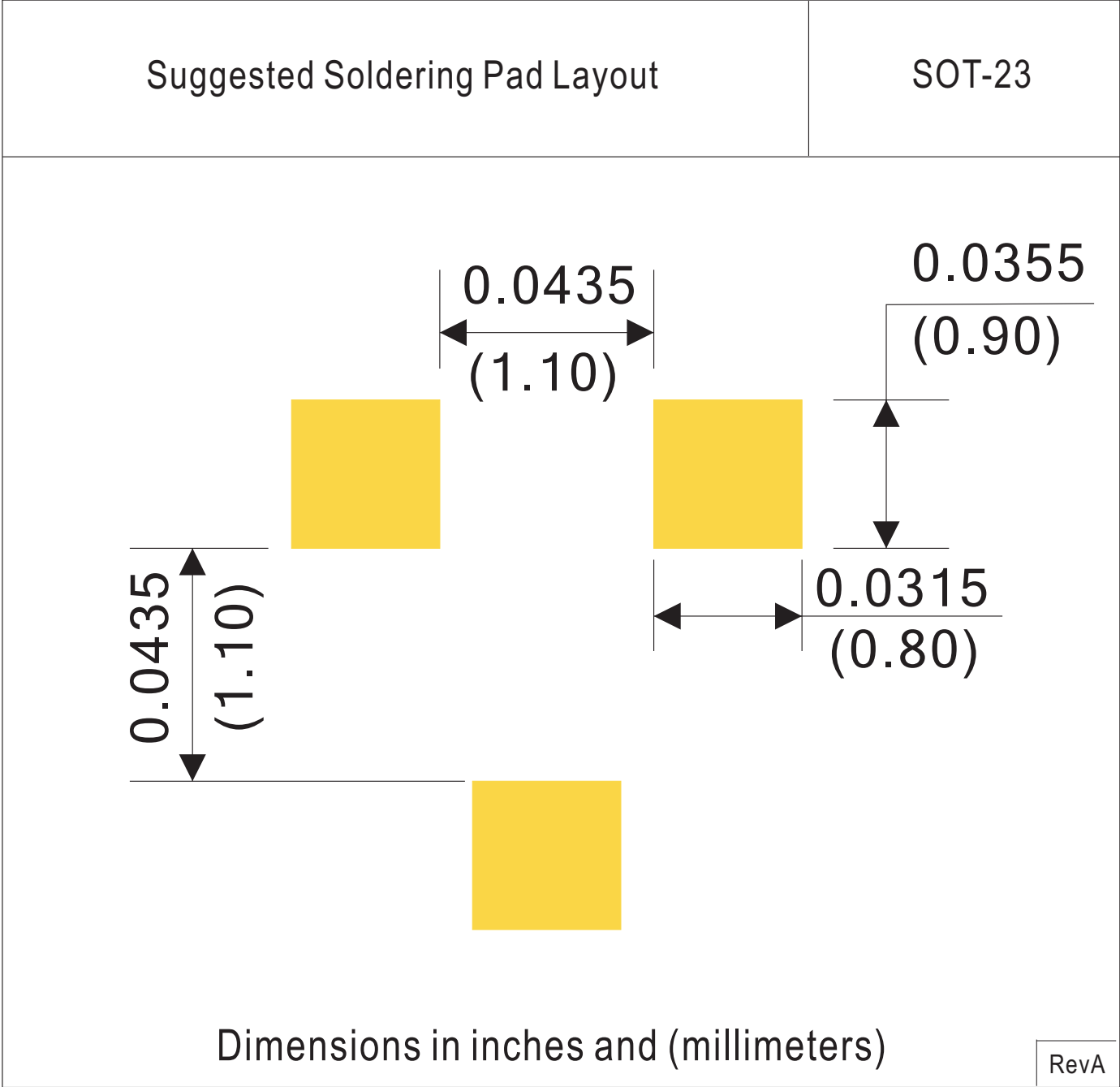
Outline Drawing

SOT-23



Dimensions in inches and (millimeters)

Rev.E





Ordering Information:

Device PN	Marking ⁽⁴⁾	Packing
SE2311GD -T(1)H(2)-WS(3)	A9	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) Packing code suffix "G" for RoHS product ; Packing code Suffix "H" for halogen free product.
All materials and products supplied comply with the U.S. Toxic Substances Control Act statement, PBT Chemicals.

(3) Willas brand abbreviation, Label Type does not display

(4) There may be additional marking, which relates to the lot trace code information (data code and vendor code), the logo or the environmental category on the device

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