

**N-Channel High Density Trench MOSFET****PRIMARY CHARACTERISTICS**

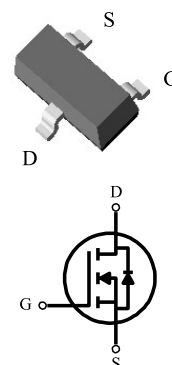
V_{DSS}	I_D	$R_{DS(ON)}(m\Omega)MAX$
30V	5.8A	27@ $V_{GS} = 10V$
	5.0A	32@ $V_{GS} = 4.5V$
	4.0A	52@ $V_{GS} = 2.5V$

FEATURES

- Super high dense cell trench design for low $R_{DS(on)}$.
- Rugged and reliable.
- Surface Mount package

SOT-23 PACKAGE

Marking Code :

**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 ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous ^a @ $T_A = 25\text{ }^{\circ}\text{C}$ -Pulse ^b	I_D	5.8	A
	I_{DM}	24	A
Drain-Source Diode Forward Current ^a	I_S	2.5	A
Maximum Power Dissipation ^a	P_D	1.25	W
		0.75	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to 150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient ^a	R_{thJA}	100	$^{\circ}\text{C/W}$
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Note

a. Surface Mounted on FR4 Board , $t \leq 10\text{sec}$.

b. Pulse width limited by maximum junction temperature.



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ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V , I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V , V _{GS} = 0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±12V , V _{DS} = 0V			±100	nA
ON CHARACTERISTICS ^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	0.7	0.9	1.4	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V , I _D = 5.8A		25	27	mΩ
		V _{GS} = 4.5V , I _D = 5.0A		29	32	
		V _{GS} = 2.5V , I _D = 4.0A		42	52	
Forward Transconductance	g _{fs}	V _{DS} = 5V , I _D = 5A		10		S
DRAIN-SOURCE DIODE CHARACTERISTICS ^b						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V , I _S = 1.0A			1.2	V
DYNAMIC CHARACTERISTICS ^c						
Input Capacitance	C _{ISS}	V _{DS} = 15V , V _{GS} = 0V f = 1.0MHz		551		pF
Output Capacitance	C _{OSS}			54		pF
Reverse Transfer Capacitance	C _{RSS}			46		pF
SWITCHING CHARACTERISTICS ^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 15V , I _D = 1A V _{GEN} = 10V R _L = 15 Ω R _{GEN} = 6 Ω		6.5		ns
Rise Time	t _r			2		ns
Turn-Off Delay Time	t _{D(OFF)}			28.6		ns
Fall Time	t _f			2.6		ns
Total Gate Charge	Q _g	V _{DS} = 15V		13.2		nC
Gate-Source Charge	Q _{gs}	I _D = 3A		2.2		nC
Gate-Drain Charge	Q _{gd}	V _{GS} = 10V		1.7		nC

Note

b. Pulse Test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

c. Guaranteed by design, not subject to production testing



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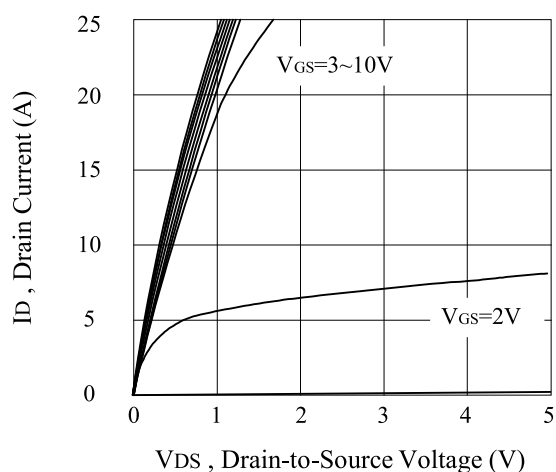


Figure 1. Output Characteristics

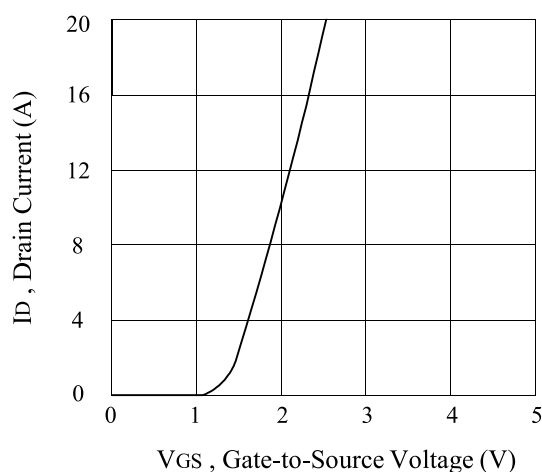


Figure 2. Transfer Characteristics

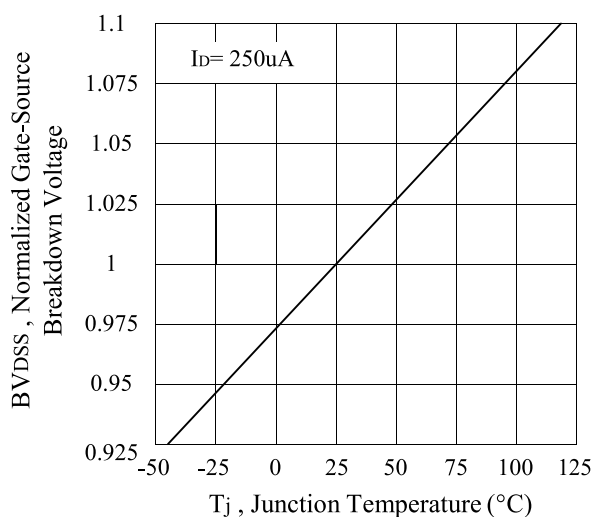


Figure 3. Breakdown Voltage Variation with Temperature

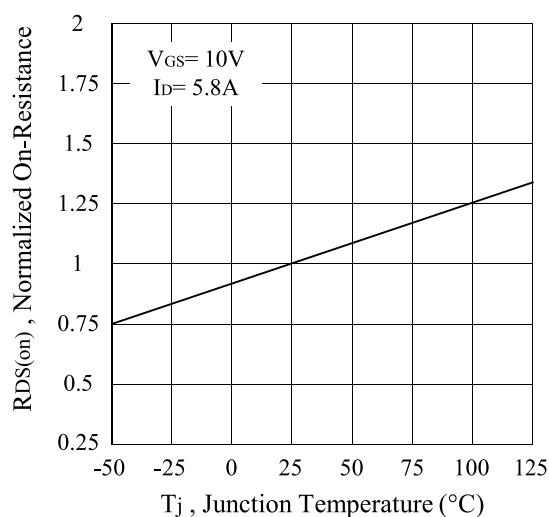


Figure 4. On-Resistance Variation with Temperature

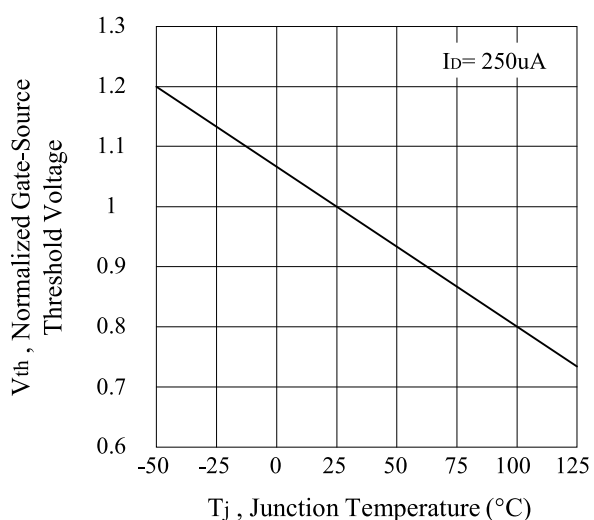


Figure 5. Gate Threshold Variation with Temperature

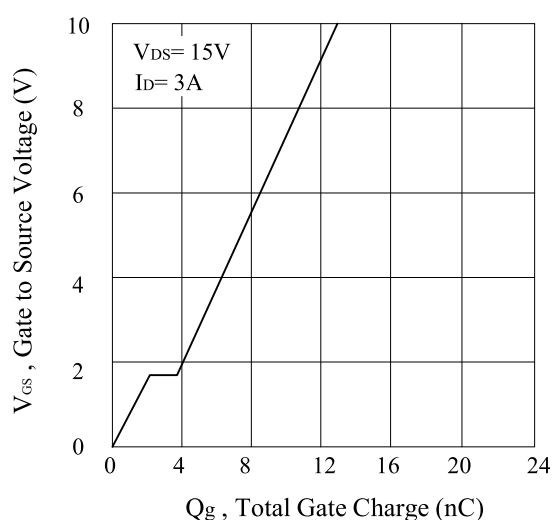


Figure 6. Gate Charge

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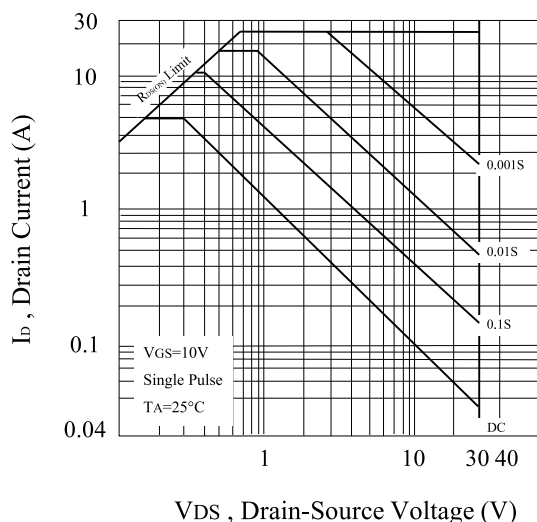


Figure 7. Maximum Safe Operating Area

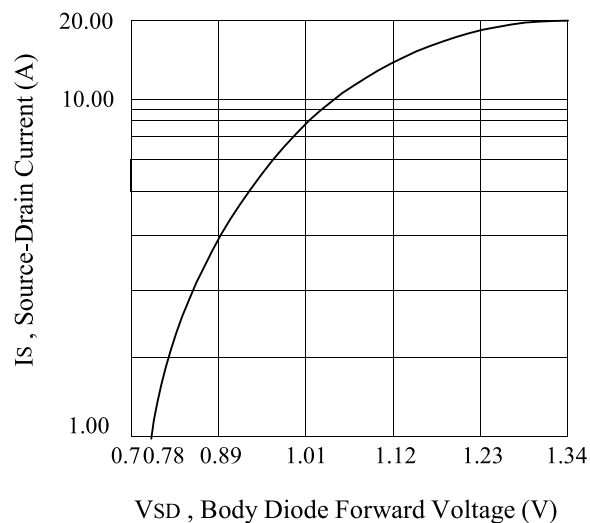


Figure 8. Body Diode Forward Voltage Variation with Source Current

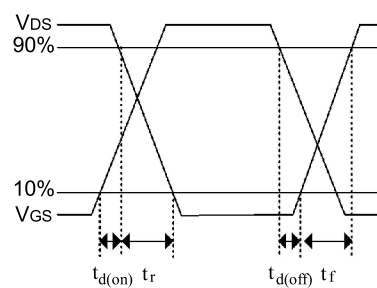
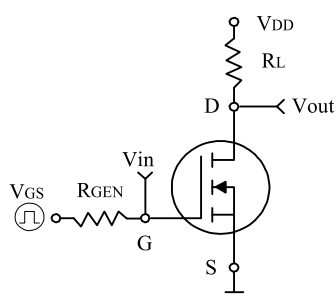


Figure 9. Switching Test Circuit and Switching Waveforms

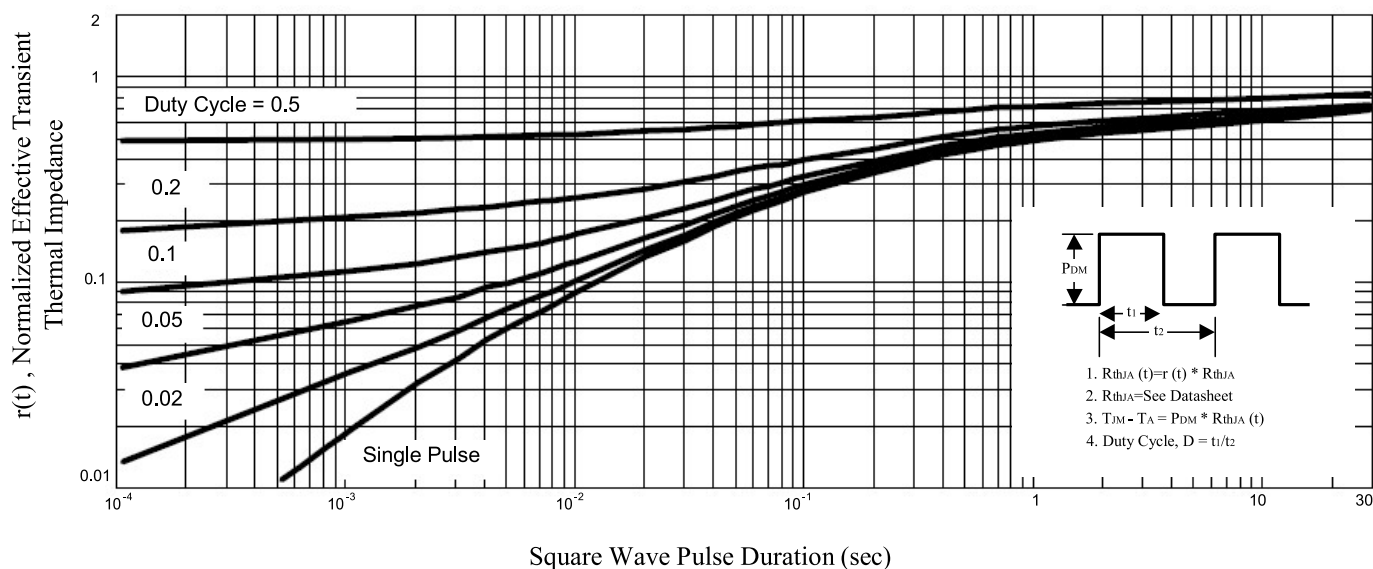
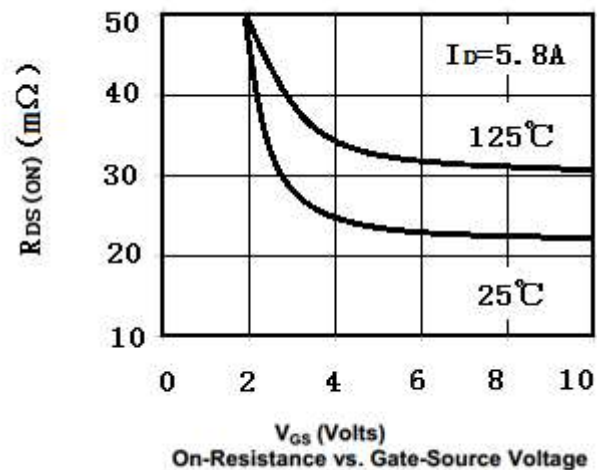
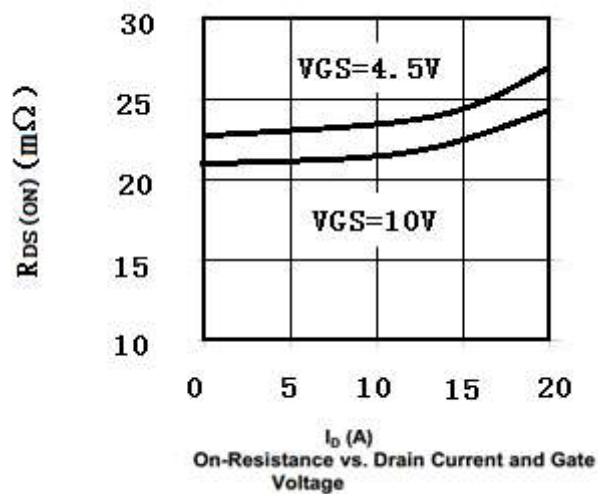


Figure 10. Normalized Thermal Transient Impedance Curve



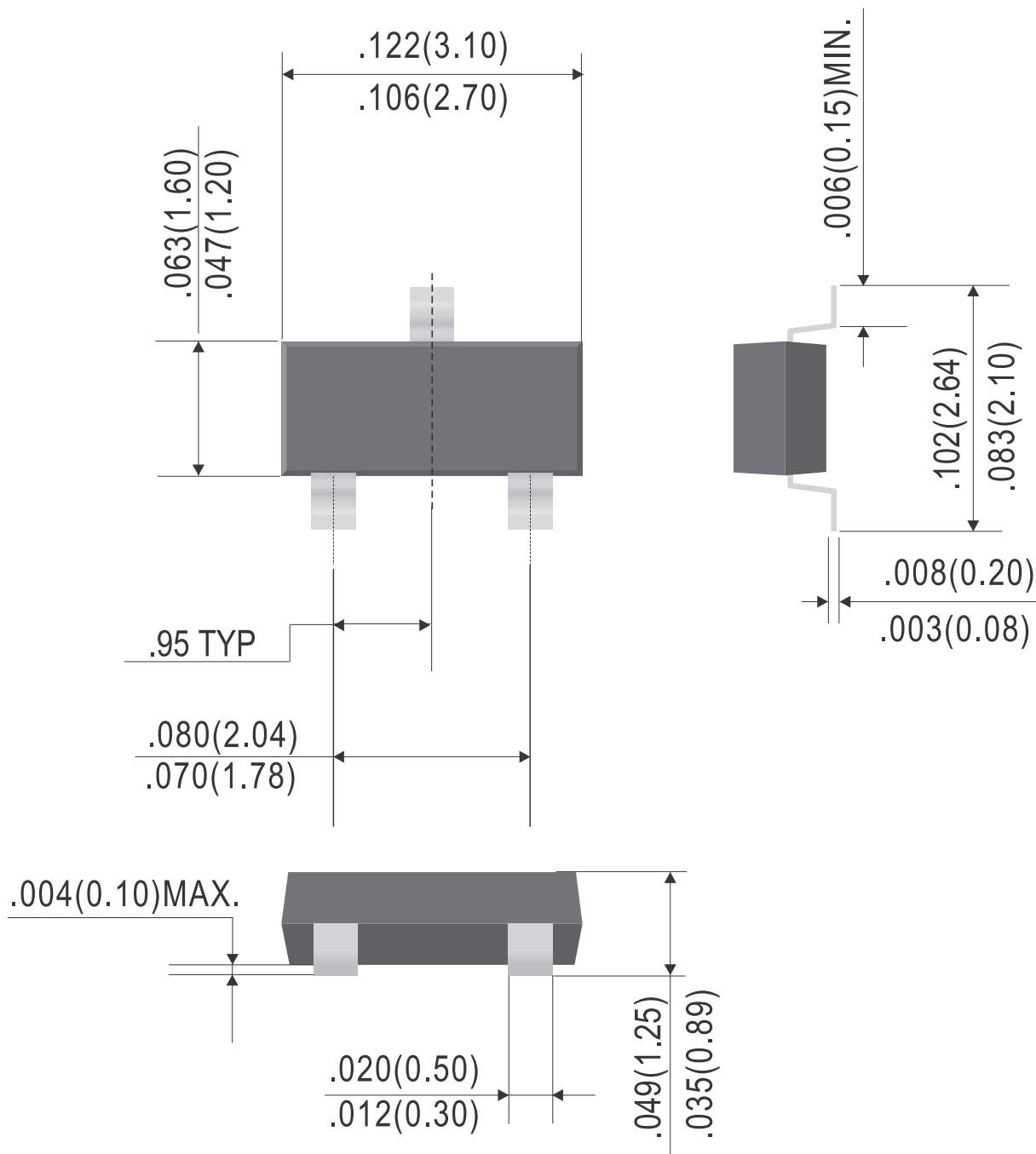
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Outline Drawing

SOT-23



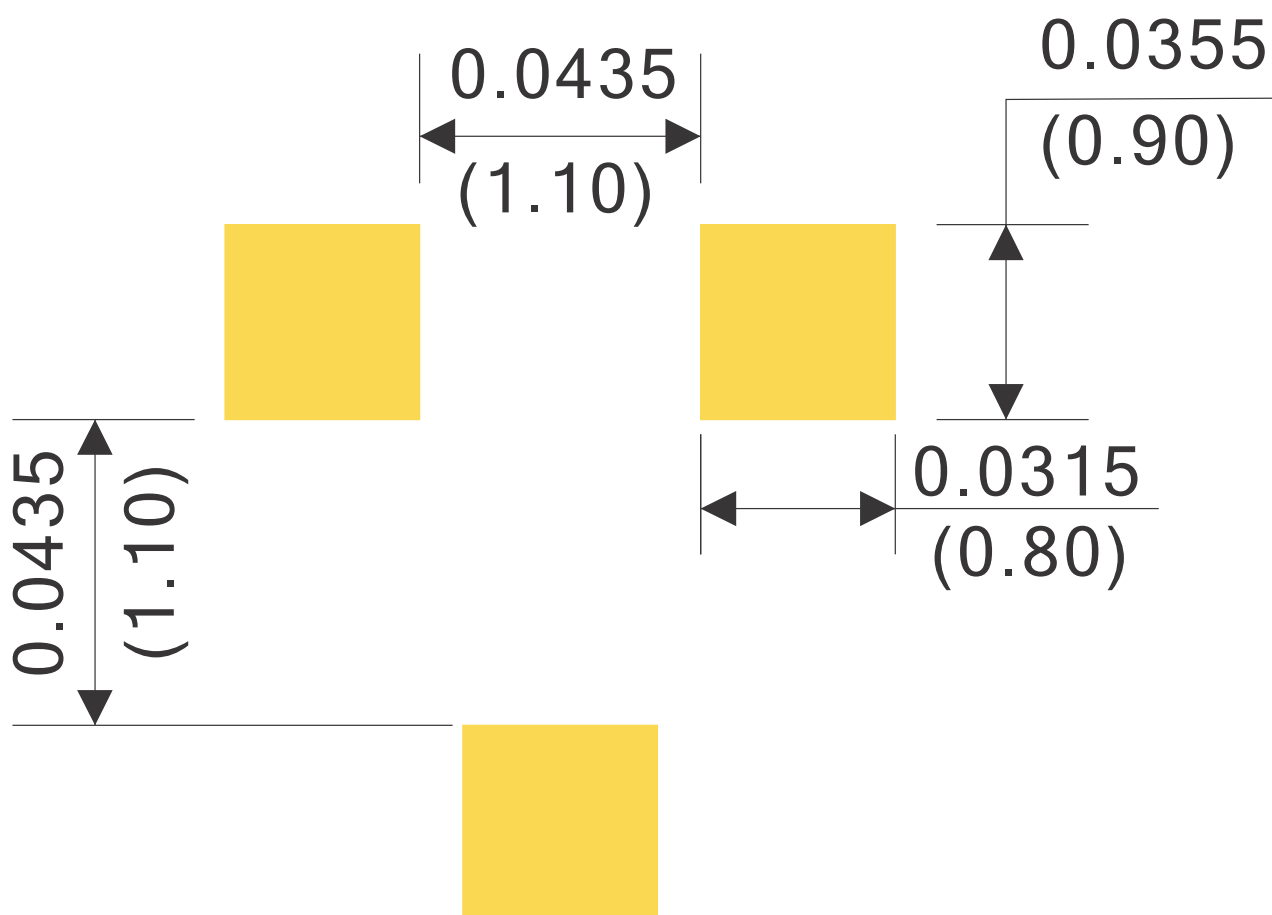
Dimensions in inches and (millimeters)

Rev.E



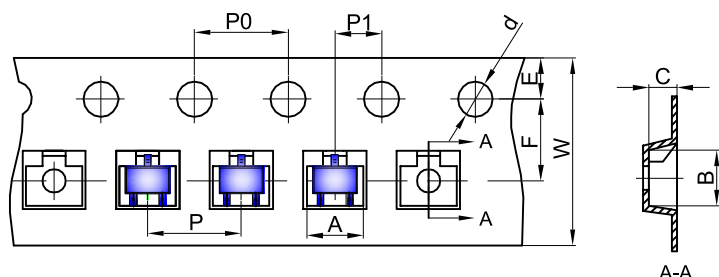
Suggested Soldering Pad Layout

SOT-23



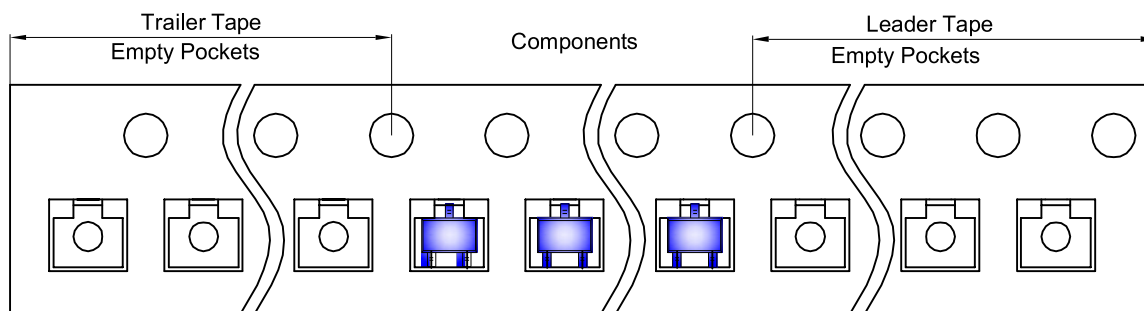
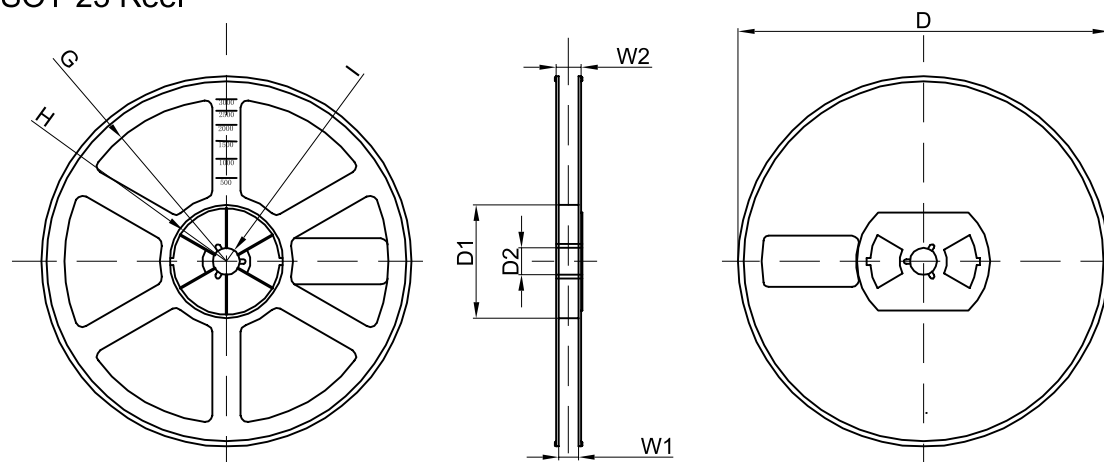
Dimensions in inches and (millimeters)

RevA

N-Channel High Density Trench MOSFET
SOT-23 Tape and Reel
SOT-23 Embossed Carrier Tape

Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

SOT-23 Reel


Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

**N-Channel High Density Trench MOSFET****Ordering Information:**

Device PN	Marking ⁽⁴⁾	Packing
SE3400GD-T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	3400	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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