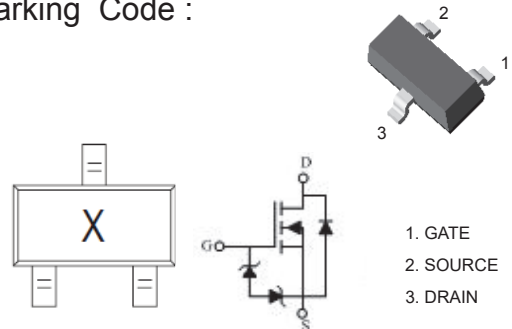


N-Channel High Density Trench MOSFET
PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(on)}$ Typ	I_D
20V	$280m\Omega @ V_{GS}=4.5V$	1A
	$580m\Omega @ V_{GS}=2.5V$	0.7A

SOT-523
PACKAGE

Marking Code :


FEATURES

- Super high dense cell trench design for low $R_{DS(on)}$
- Rugged and reliable
- Surface Mount package
- ESD protected up to 2KV

MECHANICAL DATA

- Case : Molded plastic, SOT-523
- Polarity : Shown above
- Terminals : Plated terminals, solderable per MIL-STD-750, Method 2026
- Epoxy : UL94-V0 rated flame retardant

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current-Continuous ^a @ $T_A = 25^\circ\text{C}$ -Pulse ^b	I_D	1	A
	I_{DM}	4	A
Drain-Source Diode Forward Current ^a	I_S	0.8	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}	80	$^\circ\text{C/W}$
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Note

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

b. Pulse width limited by maximum junction temperature.

**N-Channel High Density Trench MOSFET****ELECTRICAL CHARACTERISTICS (TA= 25 °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	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V , V _{GS} = 0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = 8V , V _{DS} = 0V			10	uA
ON CHARACTERISTICS ^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	0.5	0.7	1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 4.5V , I _D =0.8A		280	400	mohm
		V _{GS} = 2.5V , I _D = 0.5A		350	500	
DRAIN-SOURCE DIODE CHARACTERISTICS ^b						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V , I _S = 0.6A			1.2	V
DYNAMIC CHARACTERISTICS ^c						
Input Capacitance	C _{ISS}	V _{DS} = 8V , V _{GS} = 0V f = 1.0MHz		480		pF
Output Capacitance	C _{OSS}			107		pF
Reverse Transfer Capacitance	C _{RSS}			72		pF
SWITCHING CHARACTERISTICS ^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 10V , I _D = 0.8A		10.4		ns
Rise Time	t _r	V _{GEN} = 4.5V		3.9		ns
Turn-Off Delay Time	t _{D(OFF)}	R _L = 3.3 ohm		26		ns
Fall Time	t _f	R _{GEN} = 6 ohm		4.8		ns
Total Gate Charge	Q _g	V _{DS} = 10V , I _D =0.8A V _{GS} = 4.5V		4.8		nC
Gate-Source Charge	Q _{gs}			2.5		nC
Gate-Drain Charge	Q _{gd}			0.8		nC

Note

b. Pulse Test Pulse width ≤ 300us , Duty Cycle ≤ 2% .

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



N-Channel High Density Trench MOSFET

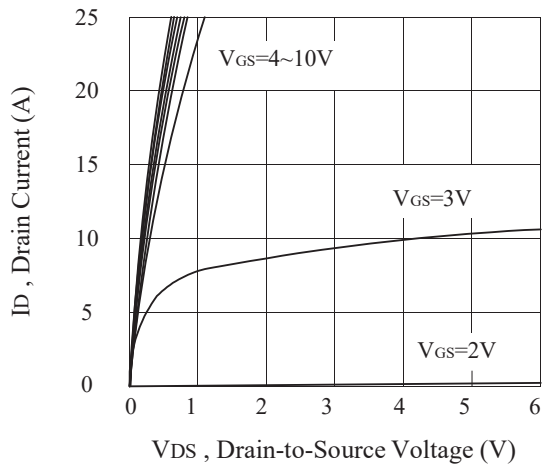


Figure 1. Output Characteristics

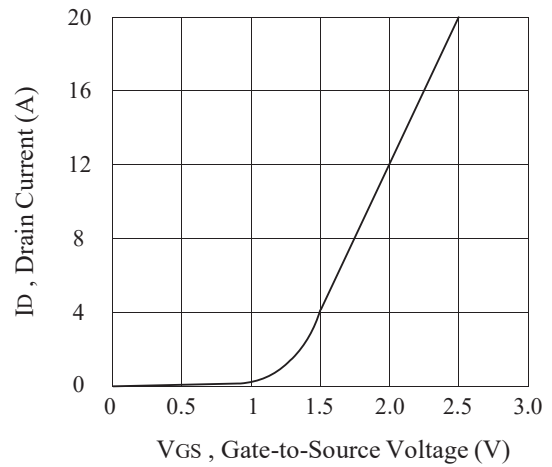


Figure 2. Transfer Characteristics

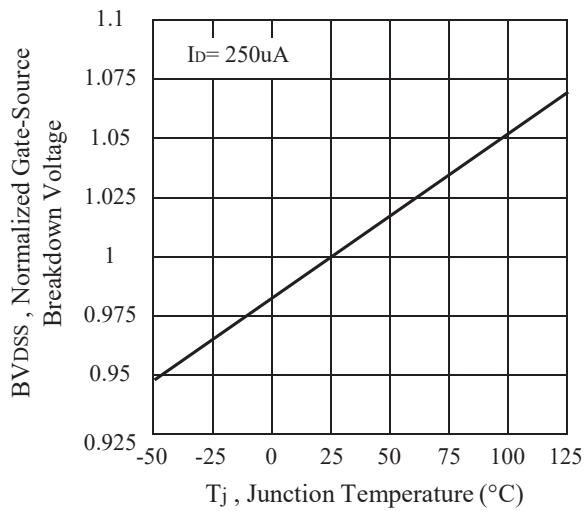


Figure 3. Breakdown Voltage Variation with Temperature

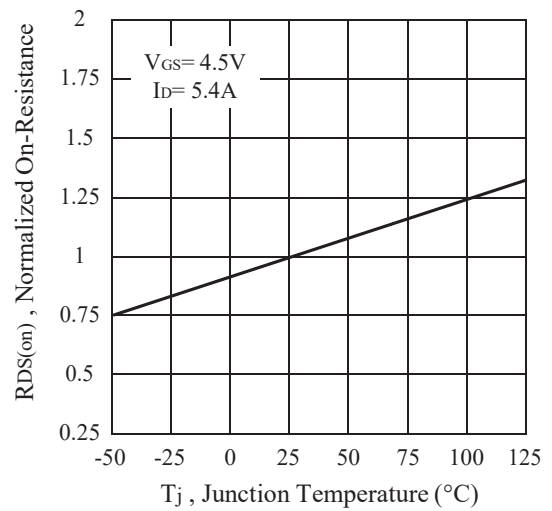


Figure 4. On-Resistance Variation with Temperature

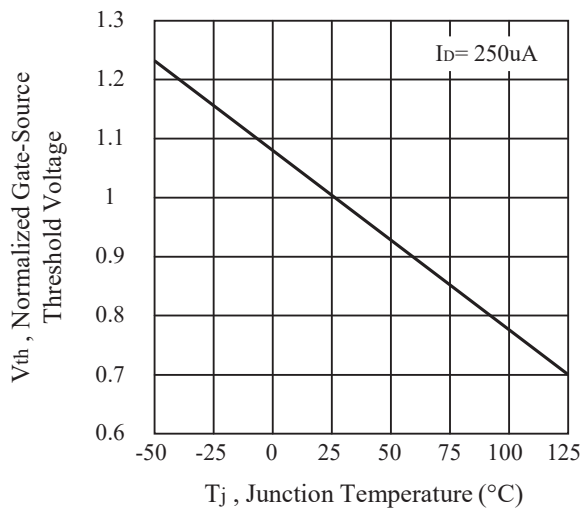


Figure 5. Gate Threshold Variation with Temperature

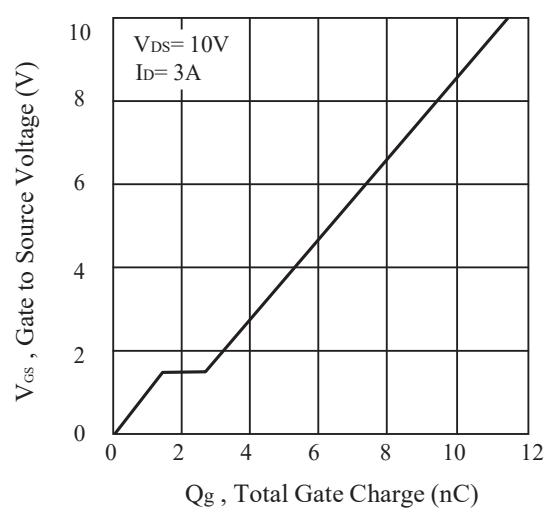


Figure 6. Gate Charge



N-Channel High Density Trench MOSFET

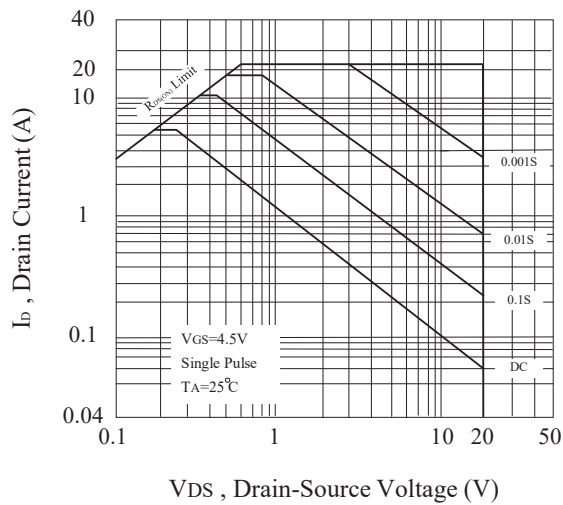


Figure 7. Maximum Safe Operating Area

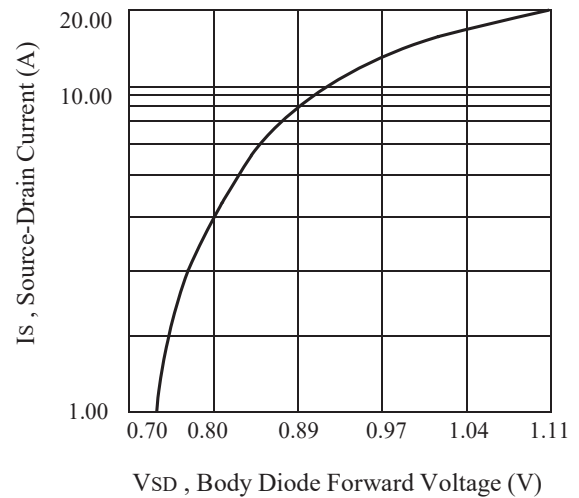


Figure 8. Body Diode Forward Voltage Variation with Source Current

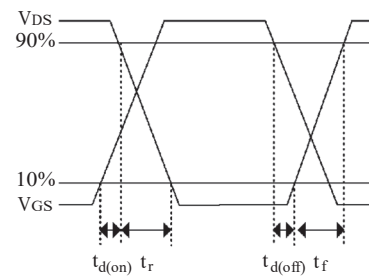
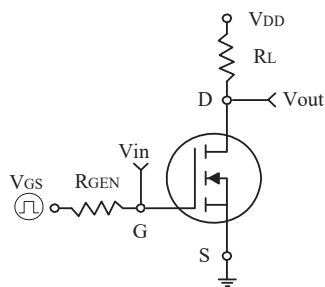


Figure 9. Switching Test Circuit and Switching Waveforms

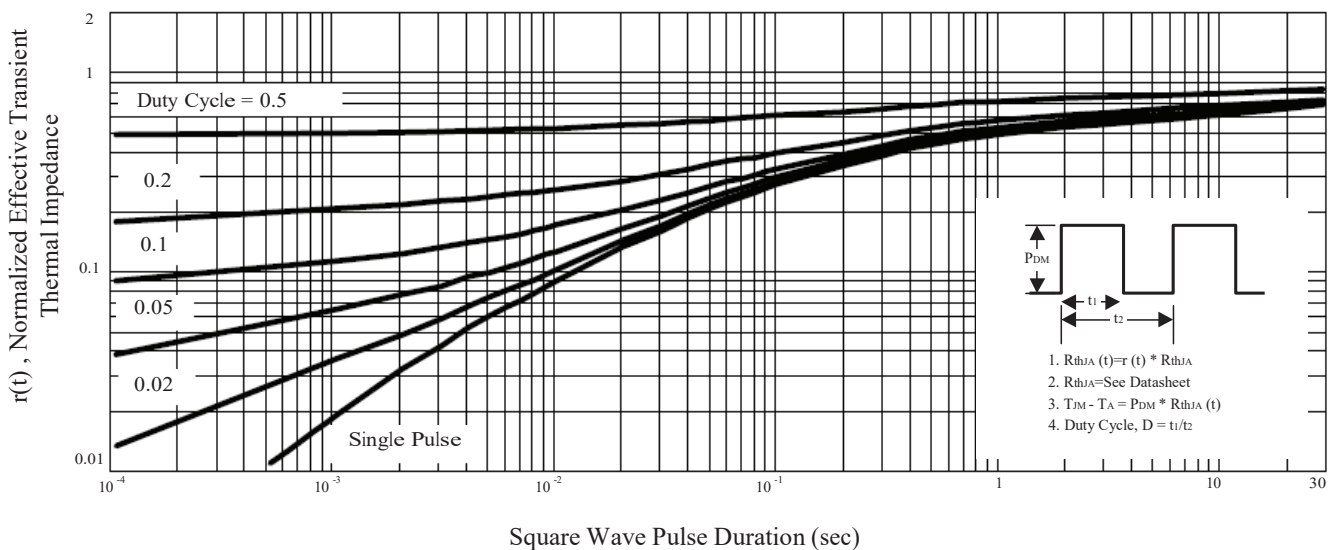
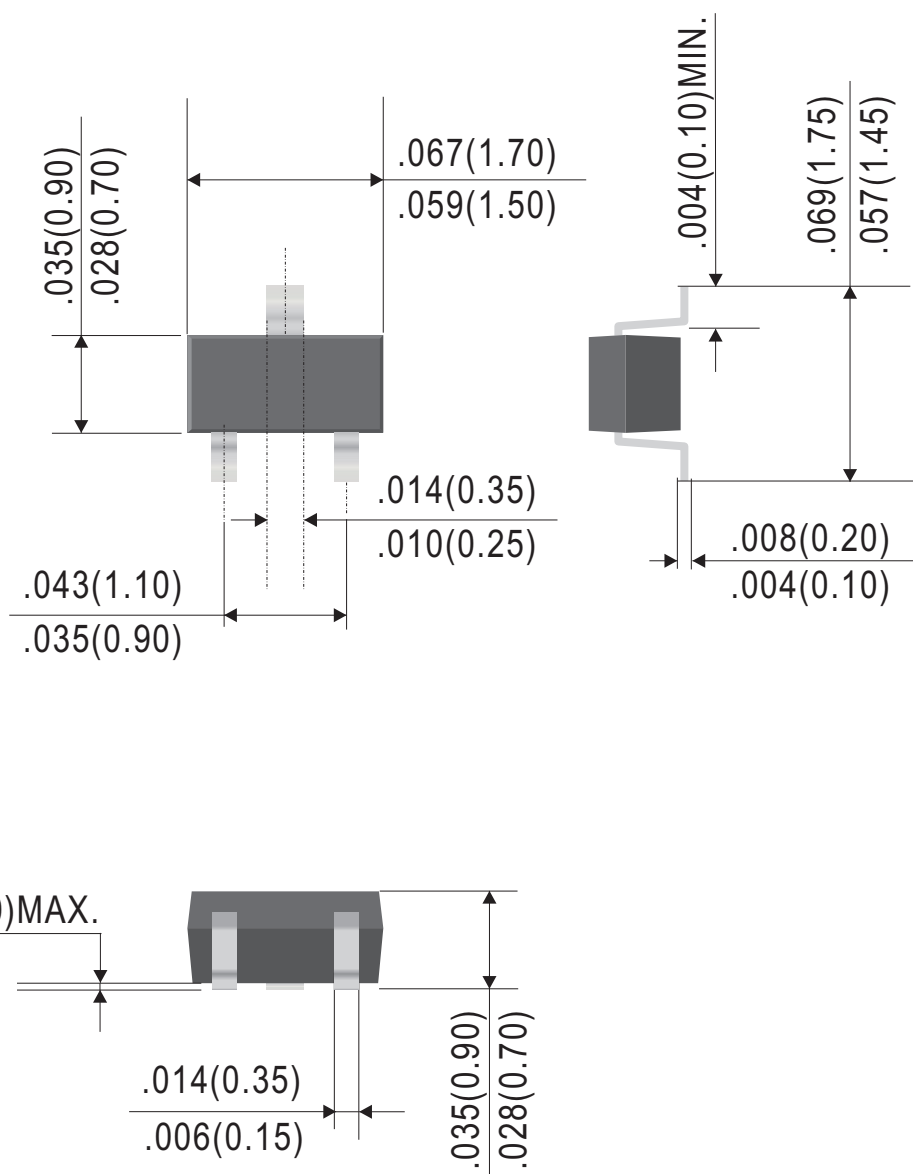


Figure 10. Normalized Thermal Transient Impedance Curve



Outline Drawing

SOT-523



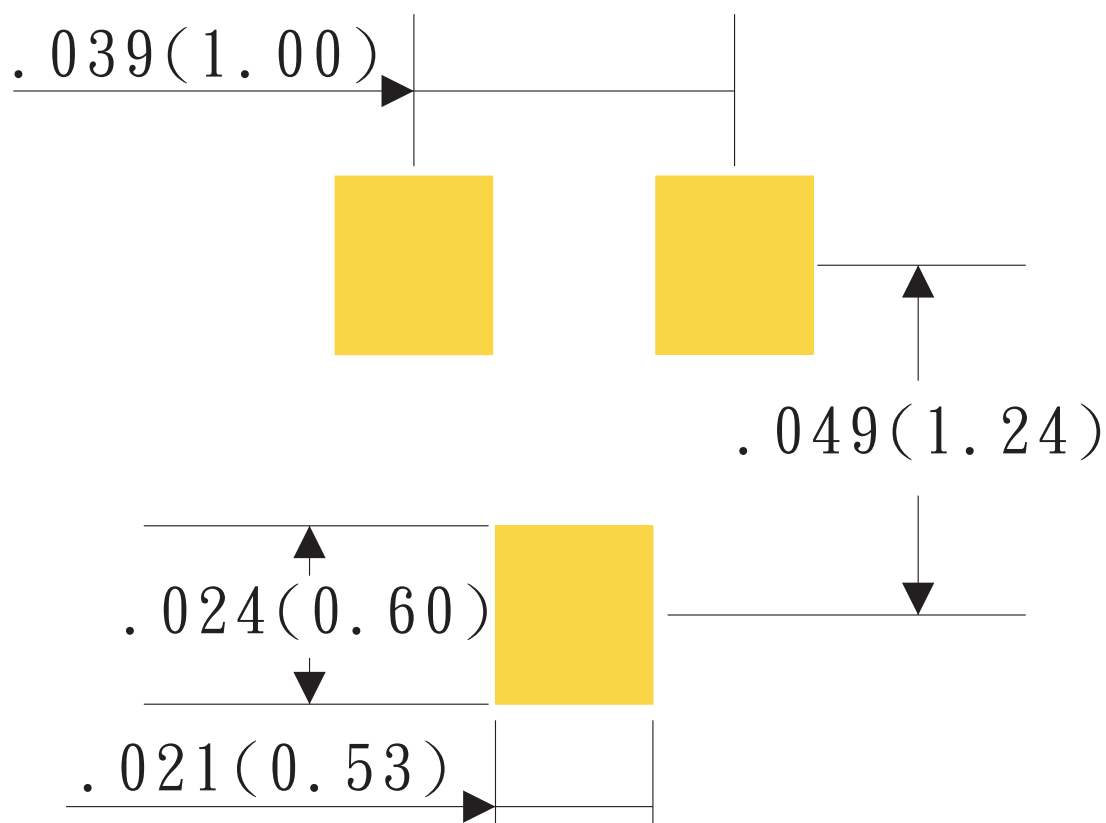
Dimensions in inches and (millimeters)

Rev.D



Suggested Soldering Pad Layout

SOT-523



Dimensions in inches and (millimeters)

RevB



N-Channel High Density Trench MOSFET

Ordering Information:

Device PN	Marking ⁽⁴⁾	Packing
SE4153GT-T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	X	Tape&Reel: 3 Kpcs/Reel

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

(2) 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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