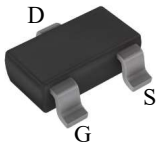
SMN139KWTH

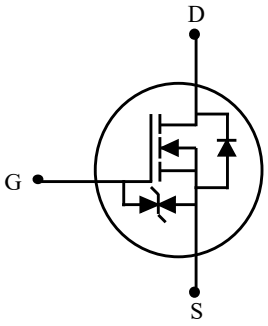
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

· ESD protected

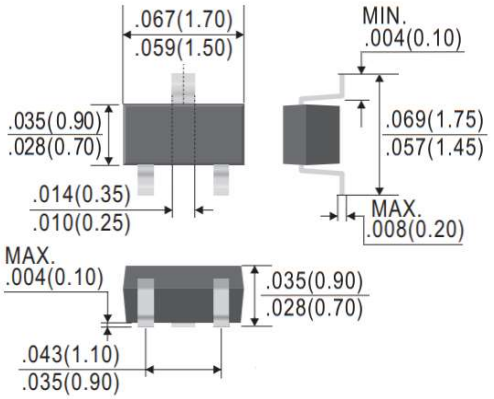
· Suffix "H" indicates Halogen-free parts, ex. SMN139KWTH





D	Drain
G	Gate
S	Source

SOT-523



Dimensions in inch and (millimeter)

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	50	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current		I_D	0.35	A
Pulsed Drain Current (Note 1)	T_C=25℃	I_{DM}	1.2	A
Power Dissipation (Note 2)	T_C=25℃	P_D	0.223	W
Thermal Resistance from Juntion to Ambient (Note 2)		$R_{\theta JA}$	560	℃/W
Operating and Storage Temperature Range		T_J,T_{stg}	- 55 to + 150	℃

Note :

1. Pulse Test: Pulse Width≤100μs, Duty Cycle≤2%,Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

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Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	I_D=250μA	$V_{(BR)DSS}$	50	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	0.5	-	1.5	V
Zero Gate Voltage Drain Current	V_{DS}=50V	I_{DSS}	-	-	0.5	μA
Gate-Body Leakage Current	V_{GS}=±16V	I_{GSS}	-	-	±10	μA
Drain-Source On-State Resistance	V_{GS}=10V, I_D=500mA	$R_{DS(on)}$	-	-	1.6	Ω
	V_{GS}=4.5V, I_D=200mA		-	-	2.5	
	V_{GS}=2.5V, I_D=100mA		-	-	4.5	
Dynamic						
Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz	R_g	-	54	-	Ω
Total Gate Charge	V_{DS}=25V, V_{GS}=4.5V, I_D=1A	Q_g	-	0.85	-	nC
	V_{DS}=25V, V_{GS}=10V, I_D=1A		-	1.30	-	
Gate-Source Charge		Q_{gs}	-	0.45	-	
Gate-Drain Charge		Q_{gd}	-	0.30	-	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{iss}	-	35.0	-	pF
Output Capacitance		C_{oss}	-	10.0	-	
Reverse Transfer Capacitance		C_{rss}	-	8.5	-	
Turn-On Delay Time	V_{GS}=10V, V_{DD}=30V, I_D=500mA, R_g=25Ω	$t_{d(on)}$	-	3.8	-	ns
Turn-On Rise Time		t_r	-	3.4	-	
Turn-Off Delay Time		$t_{d(off)}$	-	19.0	-	
Turn-Off Fall Time		t_f	-	12.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	I_S=500mA	V_{SD}	-	-	1.5	V
Diode Continuous Source Current	-	I_S	-	-	350	mA

RATINGS AND CHARACTERISTIC CURVES

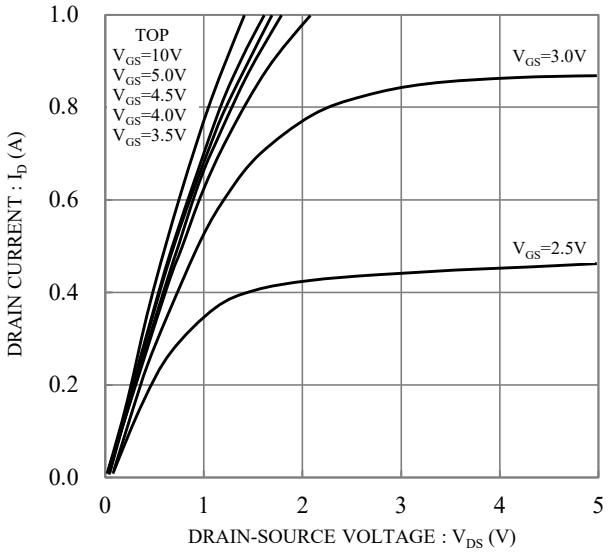

Fig.1 Typical Output Characteristics

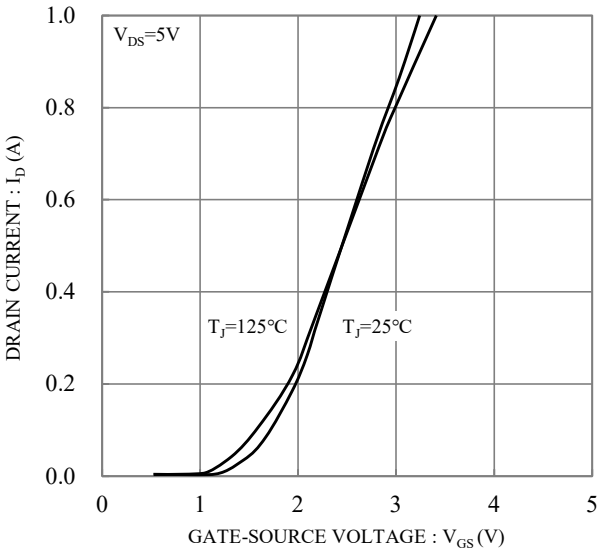

Fig.2 Typical Transfer Characteristics

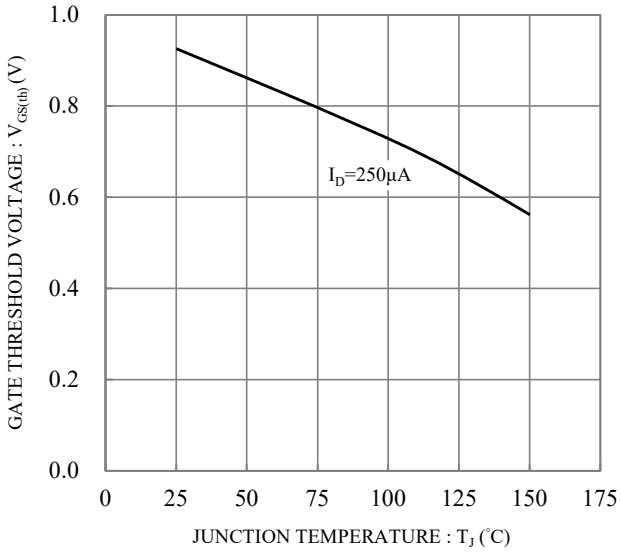

Fig.3 Gate Threshold Voltage vs. Junction Temperature

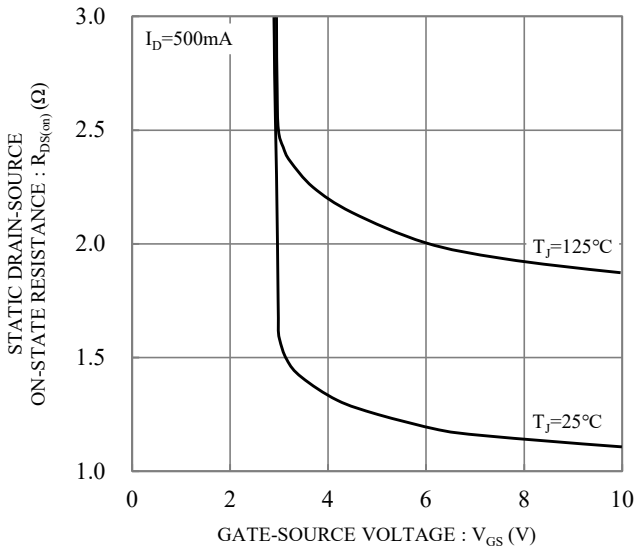

Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

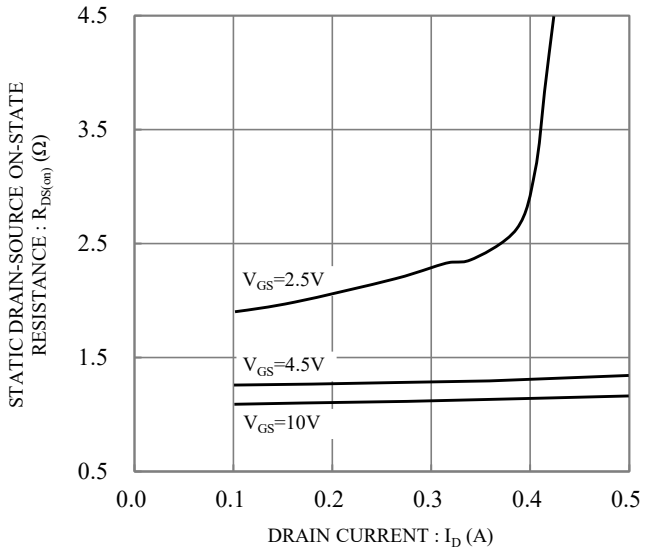

Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

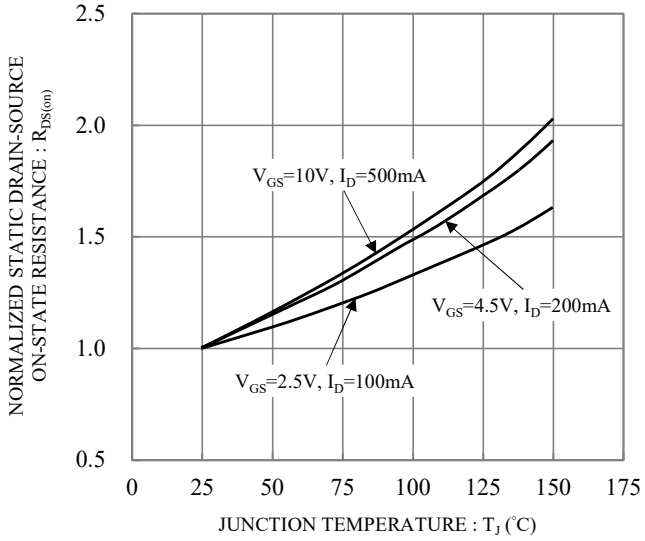

Fig.6 Drain-Source On-State Resistance vs. Junction Tempearture

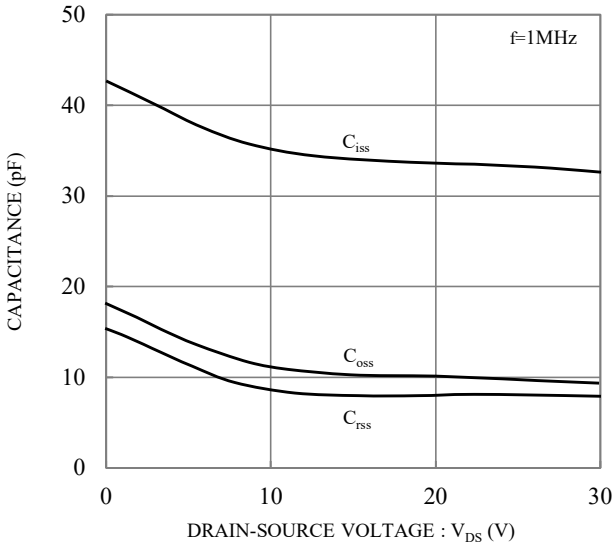

Fig.7 Capacitance vs. Drain-Source Voltage

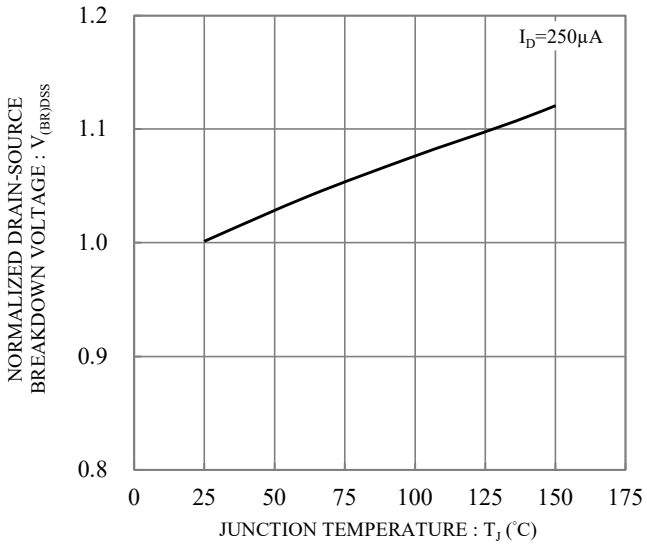

Fig.8 Breakdown Voltage vs. Junction Temperature

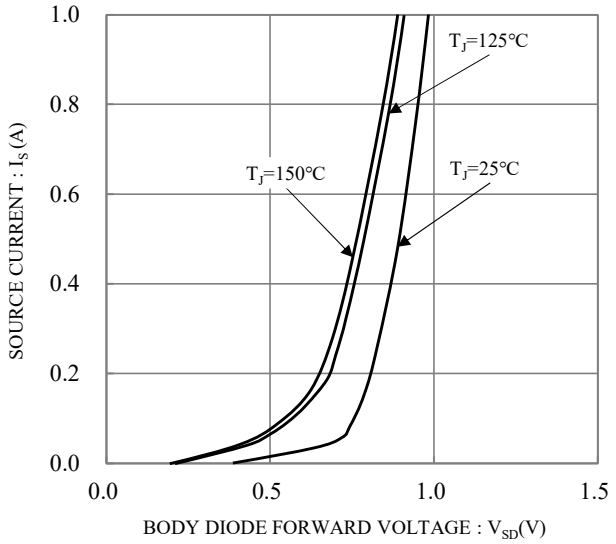

Fig.9 Body Diode Forward Voltage vs. Source Current

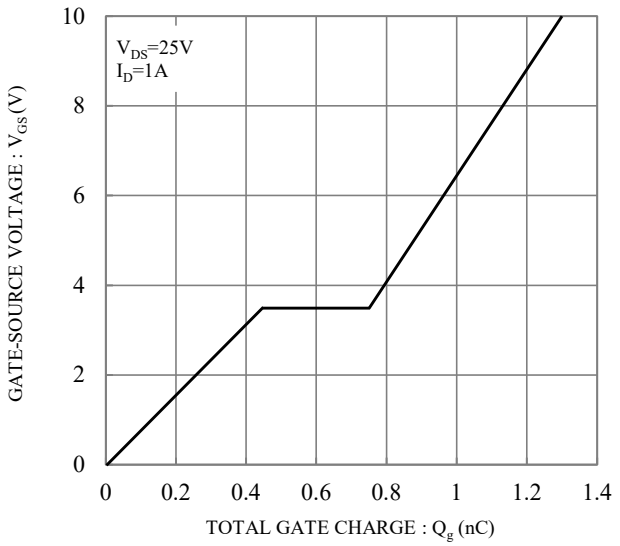

Fig.10 Gate Charge Characteristics

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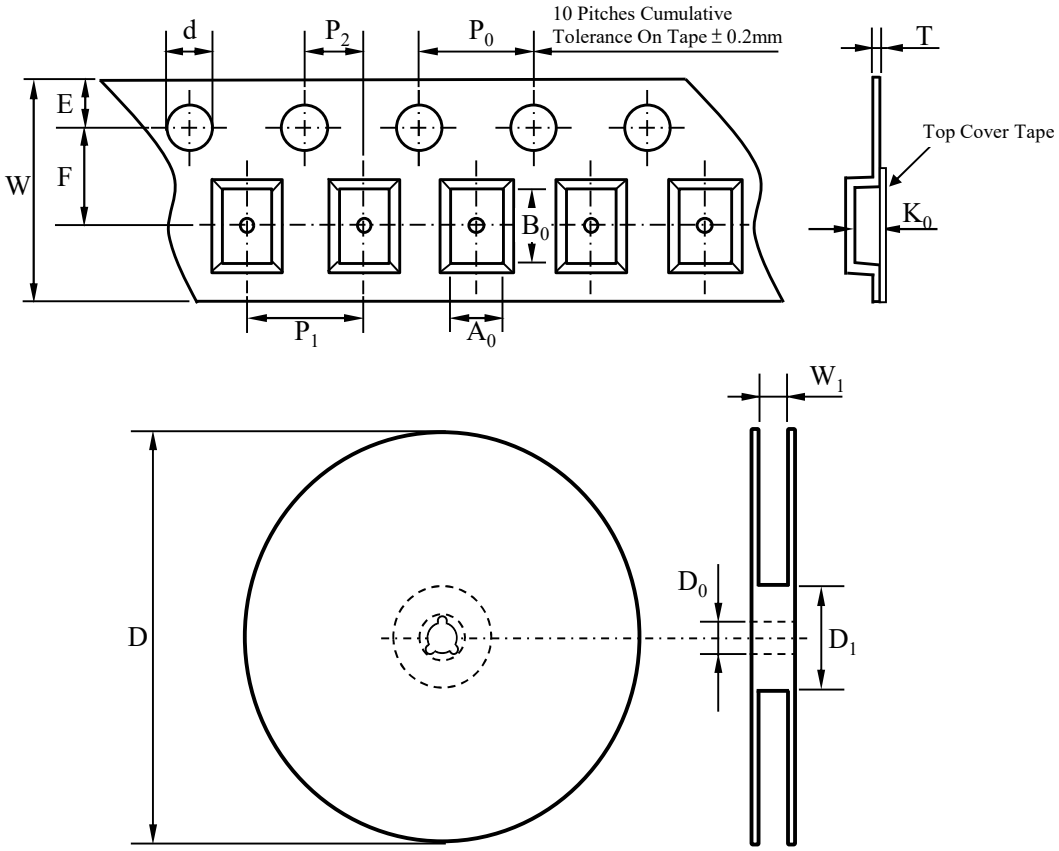
PACKAGE DIMENSION



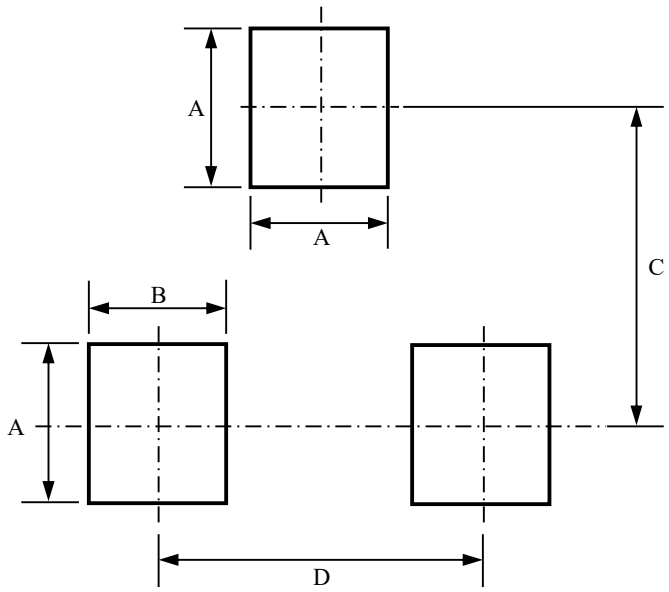
Item	Symbol	SOT-523
Carrier width	A_0	*
Carrier length	B_0	
Carrier depth	K_0	
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D_0	13.00 ± 0.50
Reel inner diameter	D_1	MIN. 50.00
Sprocke hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocke hole pitch	P_0	4.00 ± 0.10
Punch hole pitch	P_1	4.00 ± 0.10
Embossment center	P_2	2.00 ± 0.10
Overall tape thickness	T	MAX. 0.60
Tape width	W	8.00 ± 0.30
Reel width	W1	MAX. 10.00

Note *: A_0, B_0, and K_0 are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max.

ORDER INFORMATION

Part Number	Marking Code	Reel Size	Quantity
SMN139KWTH	MU	7"	4,000

SUGGESTED SOLDER PAD LAYOUT



Unit :mm

PACKAGE	A	B	C	D
SOT-523	0.70	0.60	1.30	1.00