SMP0420KWTH

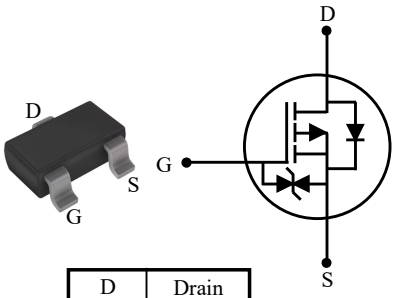
P-Channel Enhancement Mode Field Effect Transistor

FEATURES

· Fast switching speed

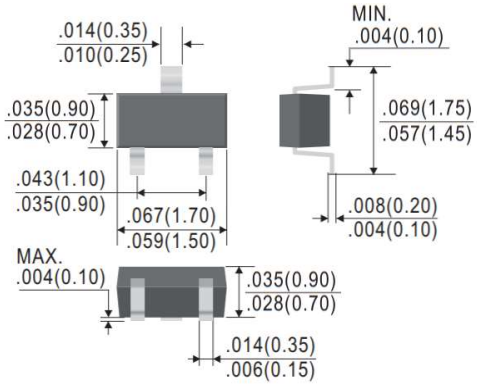
· ESD protected gate

· Suffix "H" indicates Halogen-free parts, ex.SMP0420KWTH



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}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Drain Current		I_D	-350	mA
Pulsed Drain Current	(Note 1)	I_{DM}	-1400	mA
Power Dissipation	(Note 2)	P_D	250	mW
Thermal Resistance from Juntion to Ambient	(Note 2)	$R_{\theta JA}$	500	℃/W
Operating and Storage Temperature Range		T_J, T_{stg}	- 55 to + 150	℃

Note :

1. Pulse Width ≤10μs, Duty Cycle ≤1%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. Device mounted on FR-4 substrate PC board, with minmum recommened 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	$V_{(BR)DSS}$	-20	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	$V_{GS(th)}$	-0.45	-	-1.00	V
Zero Gate Voltage Drain Current	V_{DS}=-20V	I_{DSS}	-	-	-0.1	μA
Gate-Body Leakage Current	V_{GS}=±10V	I_{GSS}	-	-	±10	μA
Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-350mA	$R_{DS(on)}$	-	-	1.2	Ω
	V_{GS}=-2.5V, I_D=-300mA		-	-	1.6	
	V_{GS}=-1.8V, I_D=-150mA		-	-	2.7	
	V_{GS}=-1.5V, I_D=-40mA		-	-	3.5	
	V_{GS}=-1.2V, I_D=-10mA		-	-	9.6	
Forward Transconductance	V_{DS}=-5V, I_D=-400mA	g_{FS}	-	1	-	S
Dynamic						
Total Gate Charge	V_{DS}=-10V, V_{GS}=-2.5V, I_D=-0.3A	Q_g	-	0.60	-	nC
	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.3A		-	1.10	-	
Gate-Source Charge		Q_{gs}	-	0.24	-	
Gate-Drain Charge		Q_{gd}	-	0.10	-	
Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1MHz	C_{iss}	-	45	-	pF
Output Capacitance		C_{oss}	-	15	-	
Reverse Transfer Capacitance		C_{rss}	-	7	-	
Turn-On Delay Time	V_{DS}=-10V, I_D=-1A, V_{GS}=-4.5V, R_g=3.3Ω	$t_{d(on)}$	-	57	-	ns
Turn-On Rise Time		t_r	-	40	-	
Turn-Off Delay Time		$t_{d(off)}$	-	34	-	
Turn-Off Fall Time		t_f	-	16	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	I_S=-0.4A, V_{GS}=0V	V_{SD}	-	-	-1.2	V
Diode Continuous Forward Current	-	I_S	-	-	-350	mA
Reverse Recovery Time	I_S=-1A, di/dt=50A/μs	t_{rr}	-	88	-	ns
Reverse Recovery Charge		Q_{rr}	-	16	-	nC

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RATINGS AND CHARACTERISTIC CURVES

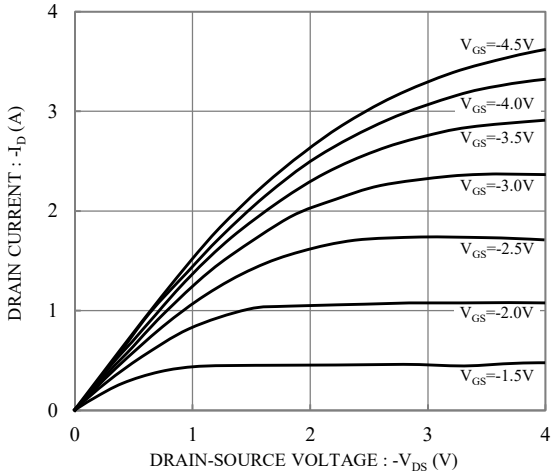

Fig.1 Typical Output Characteristics

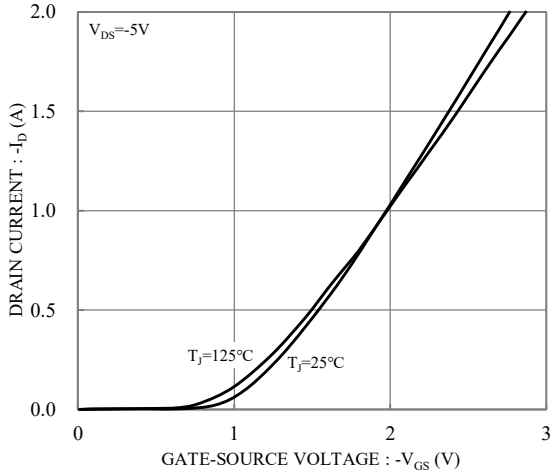

Fig.2 Typical Transfer Characteristics

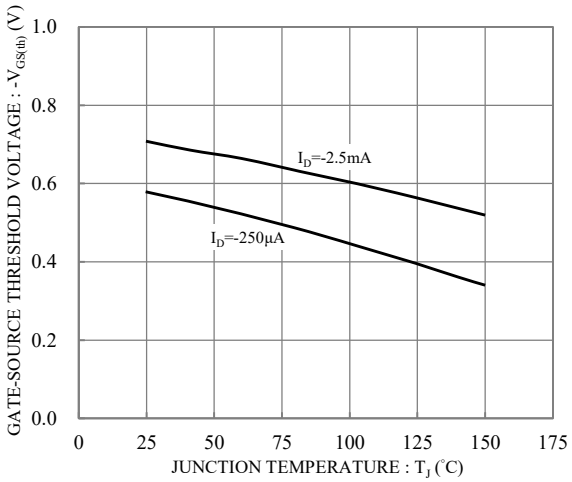

Fig.3 Gate Threshold Voltage vs. Junction Temperature

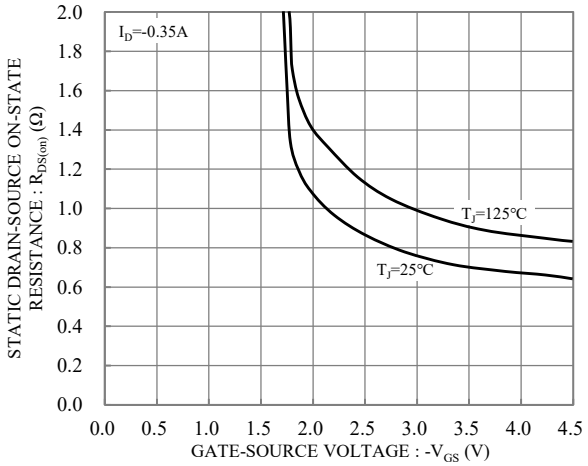

Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

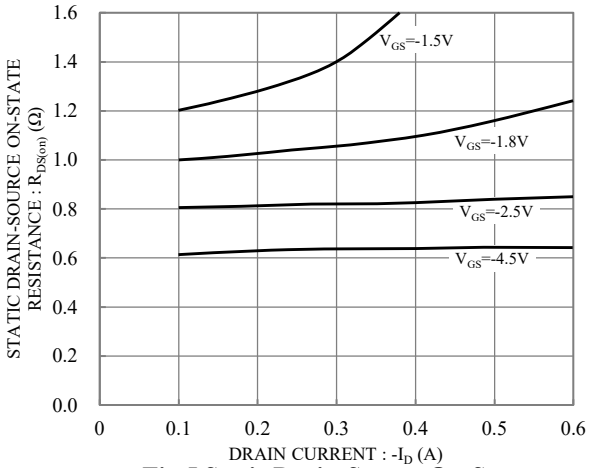

Fig.5 Static Drain-Source On-State Resistance vs. Drain current

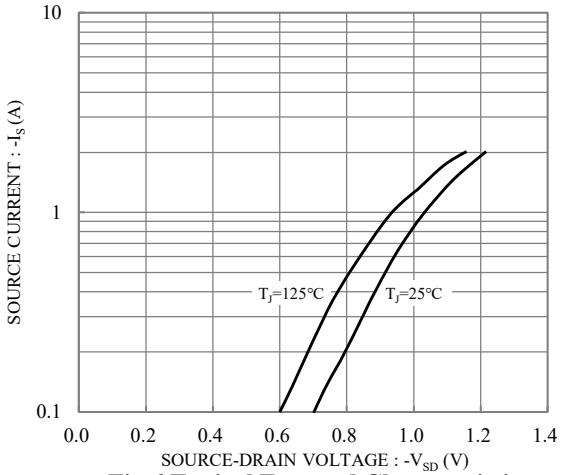

Fig.6 Typical Forward Characteristic

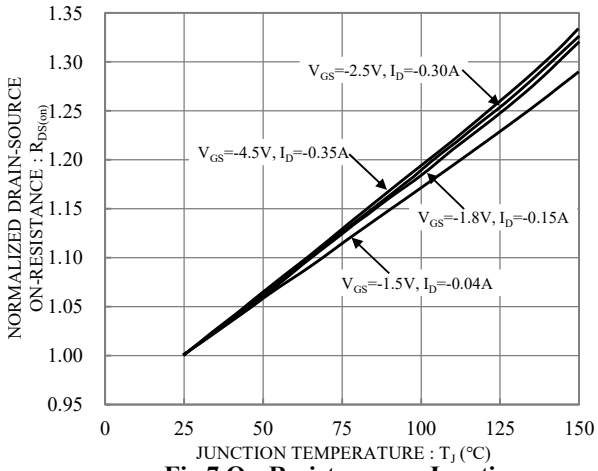

Fig.7 On-Resistance vs. Junction Temperature

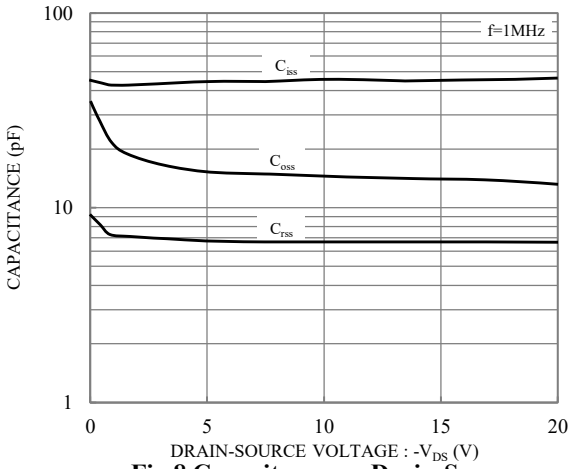

Fig.8 Capacitance vs. Drain-Source Voltage

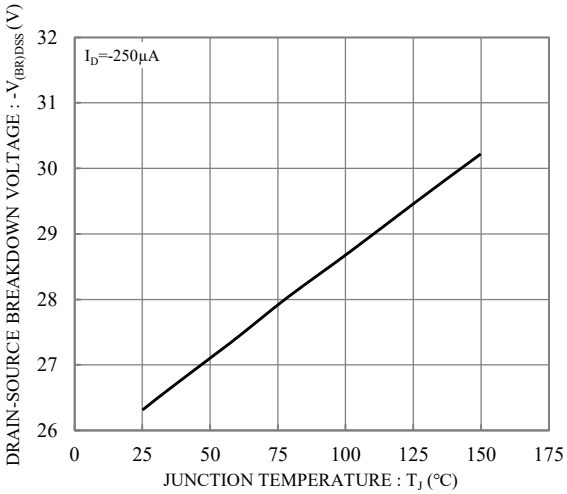

Fig.9 Breakdown Voltage vs. Junction Temperature

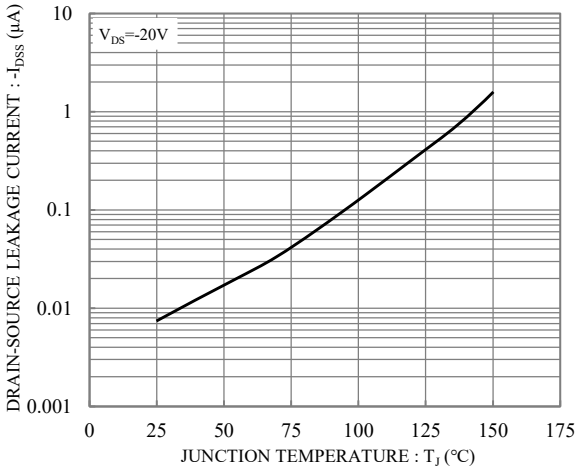

Fig.10 Drain-Source Leakage Current vs. Junction Temperature

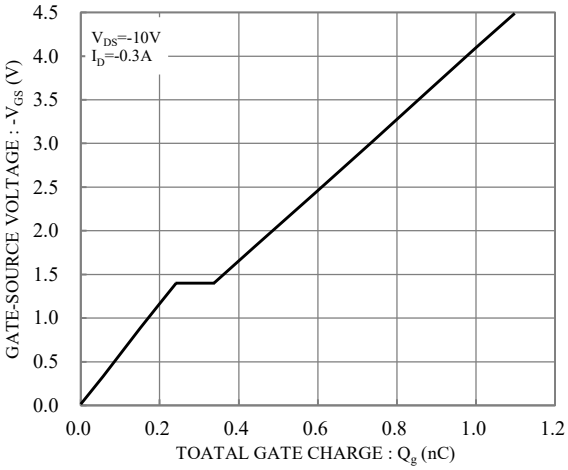

Fig.11 Gate Charge

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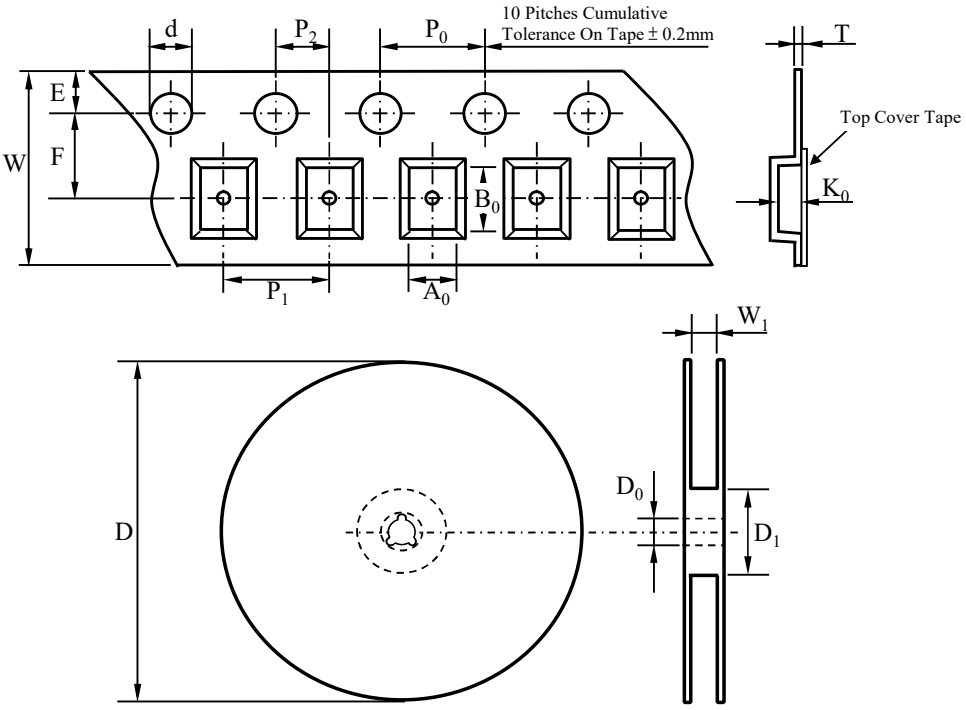
TAPE & REEL SPECIFICATION



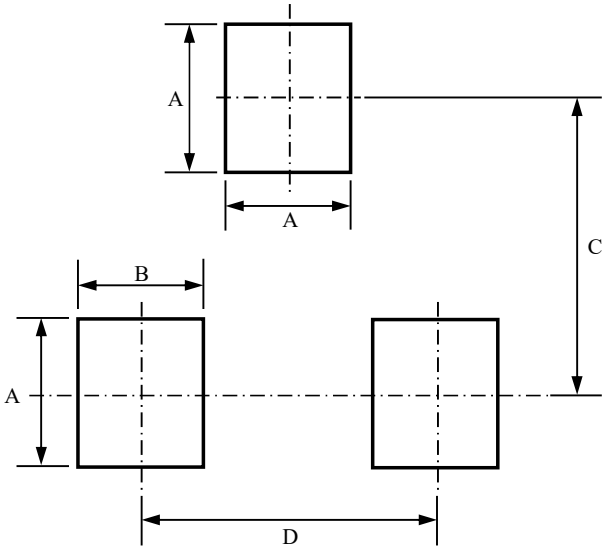
Item	Symbol	SOT-523
Carrier width	A_0	*
Carrier length	B_0	
Carrier depth	K_0	
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D_0	13.00 ± 0.50
Reel inner diameter	D_1	MIN. 50.00
Sprocke hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocke hole pitch	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	0.20 ± 0.05
Tape width	W	8.00 ± 0.20
Reel width	W1	MAX. 14.50

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
SMP0420KWTH	WA	7"	4,000

SUGGESTED SOLDER PAD LAYOUT



Unit :mm

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