

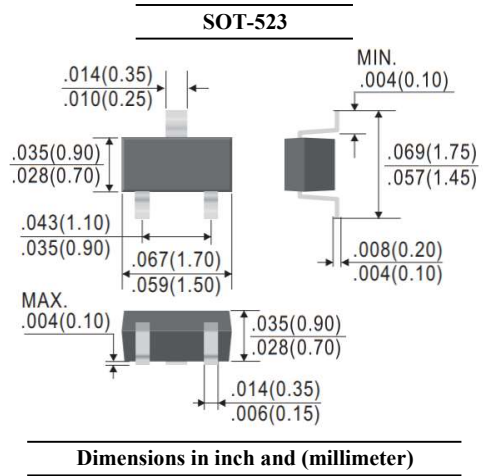
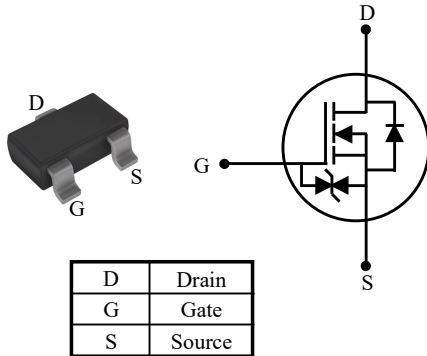


SM3019KWITH

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- Fast switching speed
- ESD protected
- Suffix "H" indicates Halogen-free parts, ex.SM3019KWITH



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	100	mA
Pulsed Drain Current (Note 1)	I_{DM}	500	mA
Power Dissipation (Note 2)	P_D	150	mW
Thermal Resistance from Junction to Ambient (Note 2)	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Pulse Width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$.
2. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.



SM3019KWTB

N-Channel Enhancement Mode Field Effect Transistor

Electrical Characteristics ($T_A=25\text{ }^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$I_D=10\mu\text{A}$	V_{DSS}	30	-	-	V
Gate Threshold Voltage	$V_{DS}=3\text{V}, I_D=100\mu\text{A}$	$V_{GS(th)}$	0.8	-	1.5	V
Zero Gate Voltage Drain Current	$V_{DS}=30\text{V}$	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	$V_{GS}=\pm 20\text{V}$	I_{GSS}	-	-	± 1	μA
Drain-Source On-State Resistance	$V_{GS}=10\text{V}, I_D=500\text{mA}$	$R_{DS(on)}$	-	-	2.5	Ω
	$V_{GS}=4.5\text{V}, I_D=200\text{mA}$		-	-	3.0	
	$V_{GS}=2.5\text{V}, I_D=1\text{mA}$		-	-	13.0	
Forward Transconductance	$V_{DS}=3\text{V}, I_D=10\text{mA}$	g_{FS}	20	-	-	mS
Dynamic						
Gate Resistance	$f=1\text{MHz}$	R_g	-	200	-	Ω
Total Gate Charge	$V_{GS}=4.5\text{V}, V_{DS}=10\text{V}, I_D=0.5\text{A}$	Q_g	-	0.45	-	pC
Gate-Source Charge		Q_{gs}	-	0.20	-	
Gate-Drain Charge		Q_{gd}	-	0.10	-	
Input Capacitance	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	C_{iss}	-	21.0	-	pF
Output Capacitance		C_{oss}	-	12.0	-	
Reverse Transfer Capacitance		C_{rss}	-	0.3	-	
Turn-On Delay Time	$V_{DS}=30\text{V}, I_D=0.5\text{A},$ $V_{GS}=10\text{V}, R_g=25\Omega, R_L=60\Omega$	$t_{d(on)}$	-	2.7	-	ns
Turn-On Rise Time		t_r	-	2.5	-	
Turn-Off Delay Time		$t_{d(off)}$	-	13.0	-	
Turn-Off Fall Time		t_f	-	8.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	$I_S=0.5\text{A}$	V_{SD}	-	0.85	-	V
Reverse Recovery Time	$I_S=0.5\text{A}, di/dt=100\text{A}/\mu\text{s}$	t_{rr}	-	30	-	ns
Reverse Recovery Charge		Q_{rr}	-	29	-	nC



SM3019KWT

N-Channel Enhancement Mode Field Effect Transistor

RATINGS AND CHARACTERISTIC CURVES

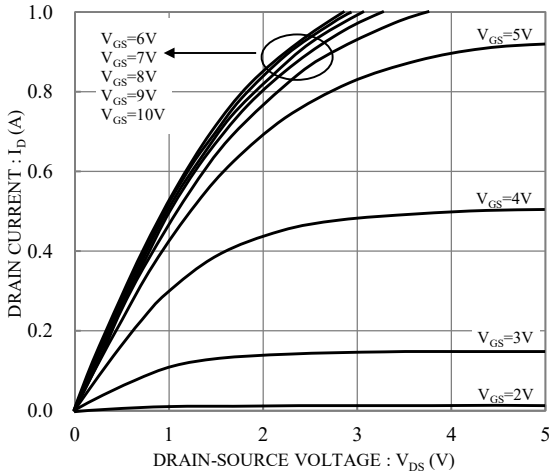


Fig.1 Typical Output Characteristics

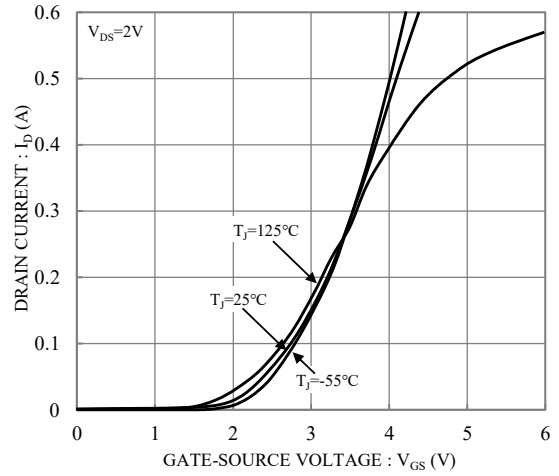


Fig.2 Typical Transfer Characteristics

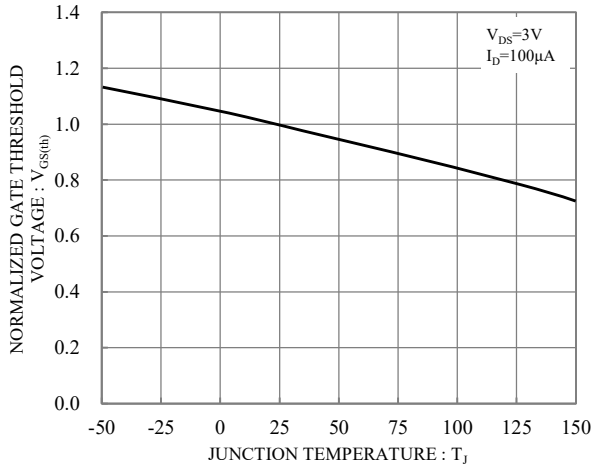


Fig.3 Gate Threshold Voltage vs. Junction Temperature

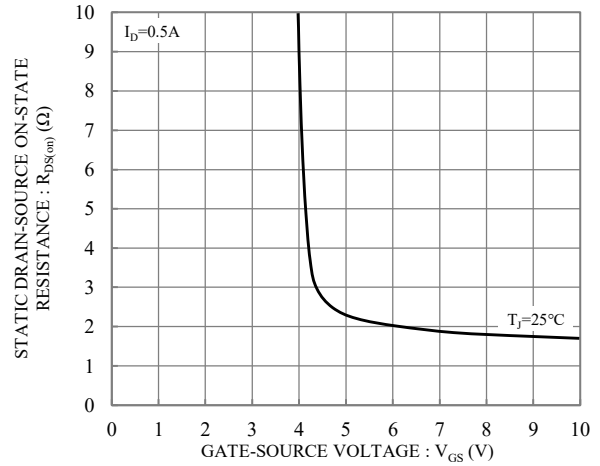


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

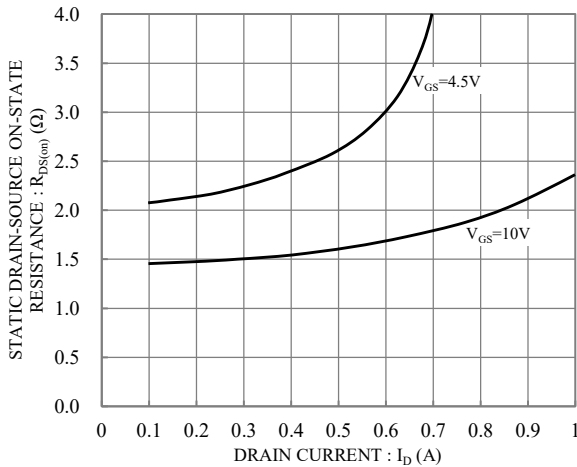


Fig.5 Static Drain-Source On-State Resistance vs. Drain current

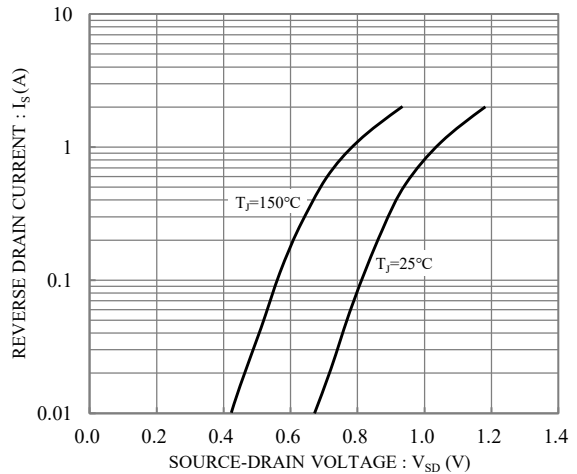


Fig.6 Typical Forward Characteristic



SM3019KWT

N-Channel Enhancement Mode Field Effect Transistor

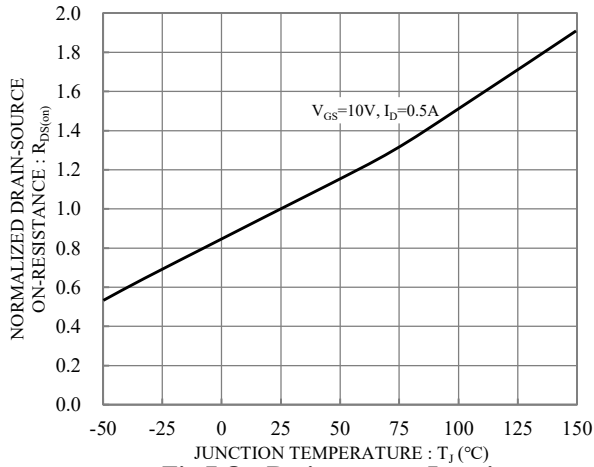


Fig.7 On-Resistance vs. Junction Temperature

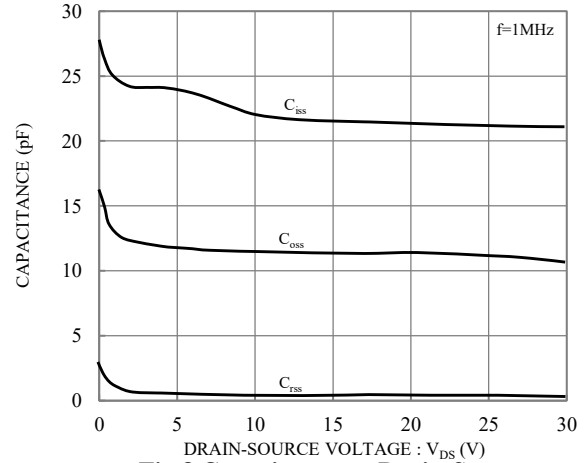


Fig.8 Capacitance vs. Drain-Source Voltage

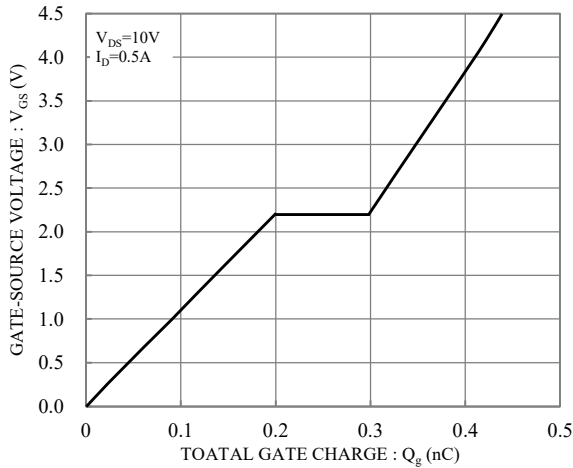


Fig.9 Gate Charge

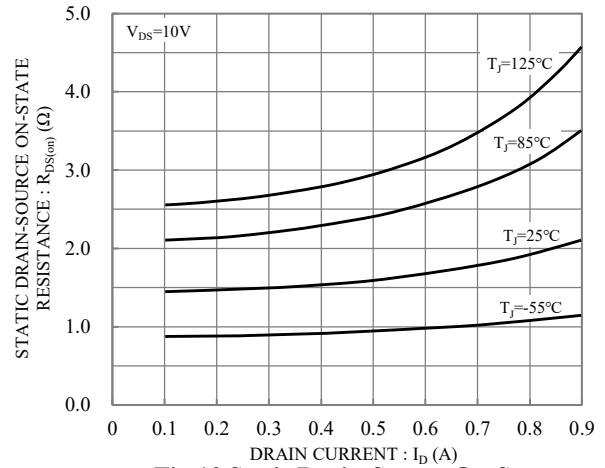


Fig.10 Static Drain-Source On-State Resistance vs. Drain current

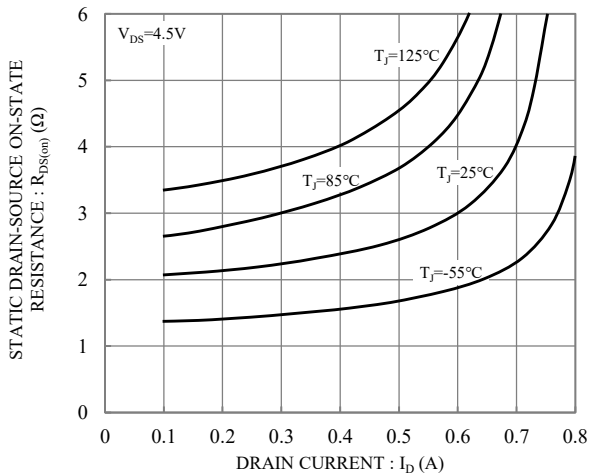


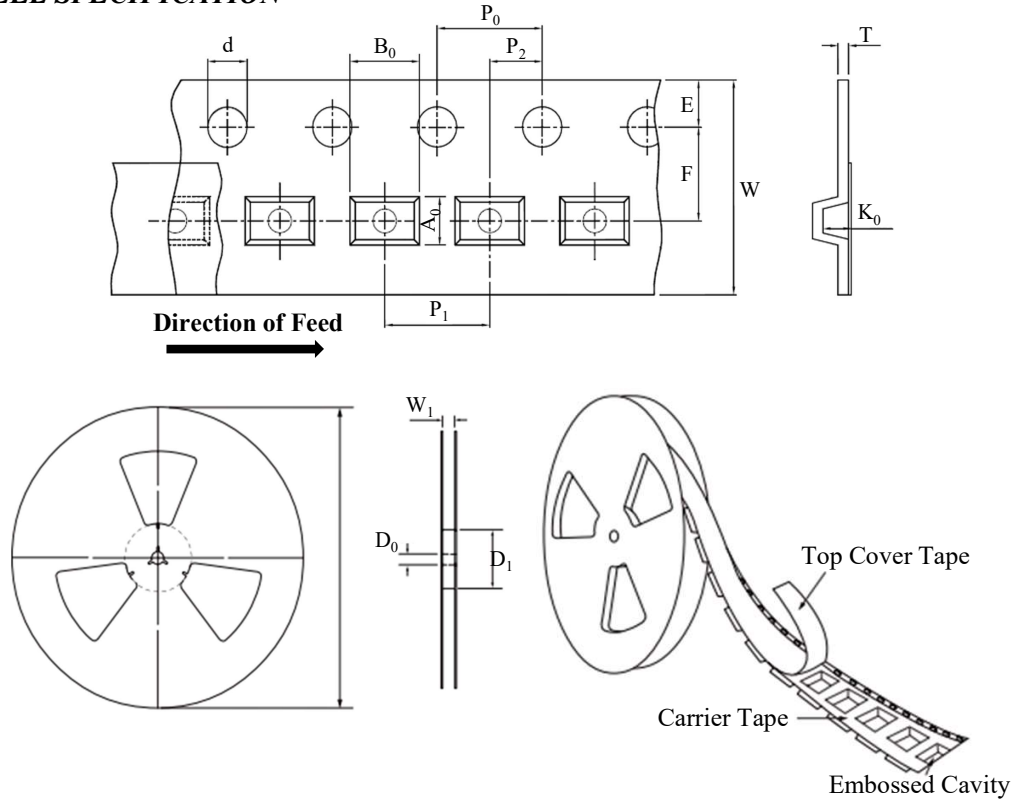
Fig.11 Static Drain-Source On-State Resistance vs. Drain current



SM3019KWTH

N-Channel Enhancement Mode Field Effect Transistor

TAPE & REEL SPECIFICATION



Item	Symbol	SOT-523
Carrier width	A_0	1.95 ± 0.10
Carrier length	B_0	1.90 ± 0.10
Carrier depth	K_0	1.20 ± 0.10
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
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket 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	W_1	MAX. 14.50

ORDER INFORMATION

Package	Reel Size	Quantity
SOT-523	7"	4,000

MARKING CODE

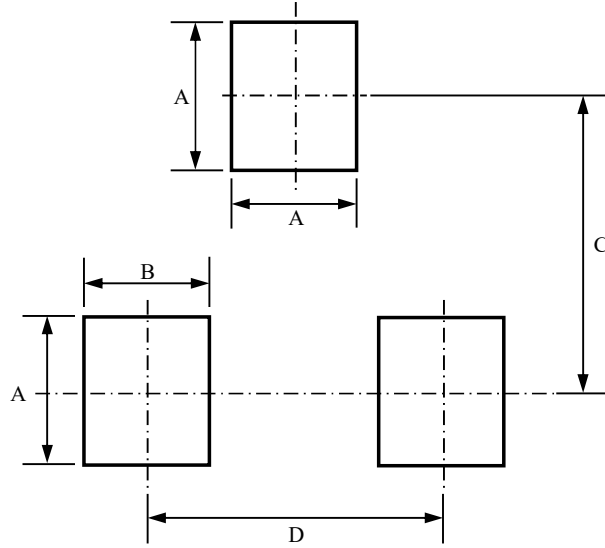
Part Number	Marking Code
SM3019KWTH	KN



SM3019KWTH

N-Channel Enhancement Mode Field Effect Transistor

SUGGESTED SOLDER PAD LAYOUT



Unit :mm

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