

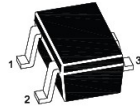
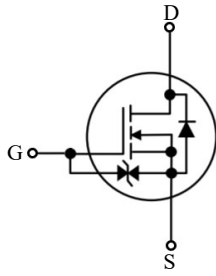


SM290KWTH

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

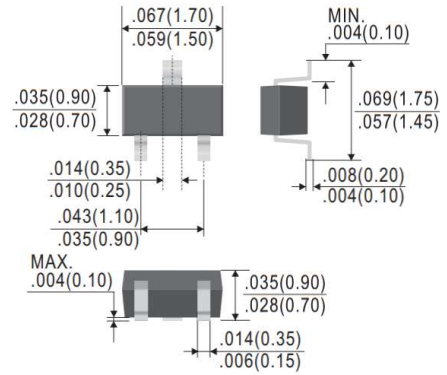
- ESD protected up to 2kV
- Suffix "H" indicates Halogen-free parts, ex. SM290KWTH



1.Gate 2.Source 3.Drain

D	Drain
G	Gate
S	Source

SOT-523



Dimensions in inch and (millimeter)

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 8	V
Drain Current (Note 1)	I_D	at $V_{GS}=4.5\text{V}$, $T_A=25^\circ\text{C}$	700
		at $V_{GS}=4.5\text{V}$, $T_A=100^\circ\text{C}$	440
Peak Pulse Drain Current ($t_p \leq 10\mu\text{s}$)	I_{DM}	2.8	A
Total Power Dissipation (Note 1)	P_D	300	mW
Thermal Resistance from Junction to Ambient (Note 2)	$R_{\theta JA}$	510	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Device mounted on an FR-4 PCB, single-sided copper, tin-plated, mounting pad for drain 1 cm^2
2. Device mounted on an FR-4 (PCB), single-sided copper, tin-plated and standard footprint.



SM290KWTB

N-Channel Enhancement Mode Field Effect Transistor

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

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$I_D = 250\mu\text{A}$	$V_{(BR)DSS}$	20	-	-	V
Zero Gate Voltage Drain Current	$V_{DS} = 20\text{V}$ $V_{DS} = 20\text{V}, T_J = 150^\circ\text{C}$	I_{DSS}	-	-	1 10	μA
Gate Source Leakage Current	$V_{GS} = \pm 8\text{V}$ $V_{GS} = \pm 4.5\text{V}$	I_{GSS}	-	-	± 2 ± 0.5	μA
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	$V_{GS(th)}$	0.50	-	0.95	V
Static Drain Source On-Resistance	$V_{GS} = 4.5\text{V}, I_D = 0.5\text{A}$	$R_{DS(on)}$	-	-	0.38	Ω
	$V_{GS} = 2.5\text{V}, I_D = 0.4\text{A}$		-	-	0.62	
	$V_{GS} = 1.8\text{V}, I_D = 0.1\text{A}$		-	-	1.10	
	$V_{GS} = 4.5\text{V}, I_D = 0.5\text{A}, T_J = 150^\circ\text{C}$		-	-	0.61	
Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 200\text{mA}$	$ g_{fs} $	-	1.6	-	S
Dynamic						
Total Gate Charge	$V_{DS} = 10\text{V}, V_{GS} = 2.5\text{V}, I_D = 1\text{A}$	Q_g	-	0.6	-	nC
			-	1.1	-	
			-	1.1	-	
Gate-Source Charge	$V_{DS} = 10\text{V}, V_{GS} = 4.5\text{V}, I_D = 1\text{A}$	Q_{gs}	-	0.3	-	nC
Gate-Drain Charge		Q_{gd}	-	0.2	-	
Input Capacitance	$V_{GS} = 0\text{V}, V_{DS} = 10\text{V}, f = 1\text{MHz}$	C_{iss}	-	-	83	pF
Output Capacitance		C_{oss}	-	15	-	
Reverse Transfer Capacitance		C_{rss}	-	7	-	
Turn-On Delay Time		$t_{d(on)}$	-	-	12	
Rise Time	t_r	-	4	-		
Turn-Off Delay Time	$t_{d(off)}$	-	-	172		
Fall time	t_f	-	31	-		
Drain-Source Body Diode						
Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = 300\text{mA}$	V_{SD}	0.48	-	1.20	V
Continuous Forward Current	-	I_S	-	-	0.3	A



SM290KWTH

N-Channel Enhancement Mode Field Effect Transistor

RATINGS AND CHARACTERISTIC CURVES

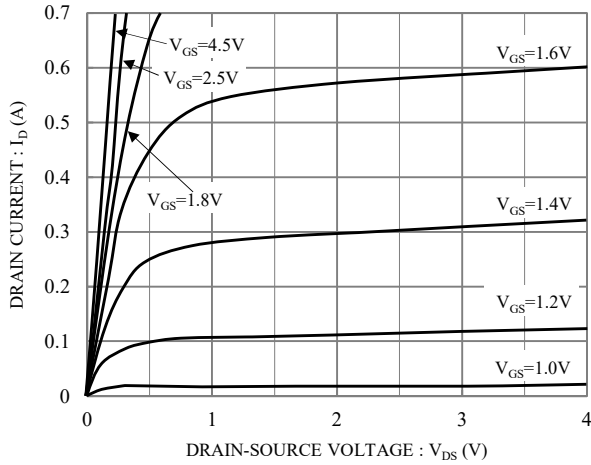


Fig.1 Typical output characteristics

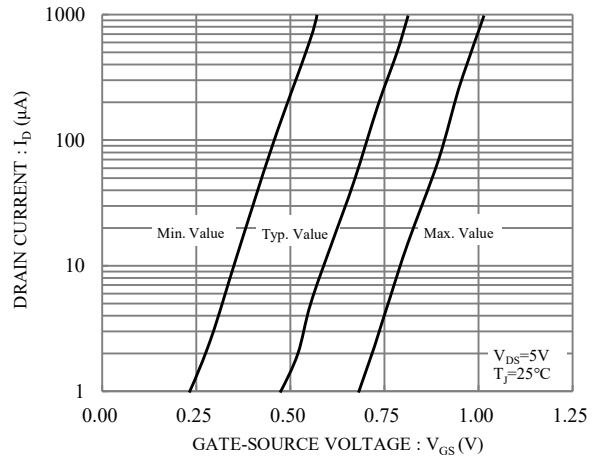


Fig.2 Typical transfer characteristics

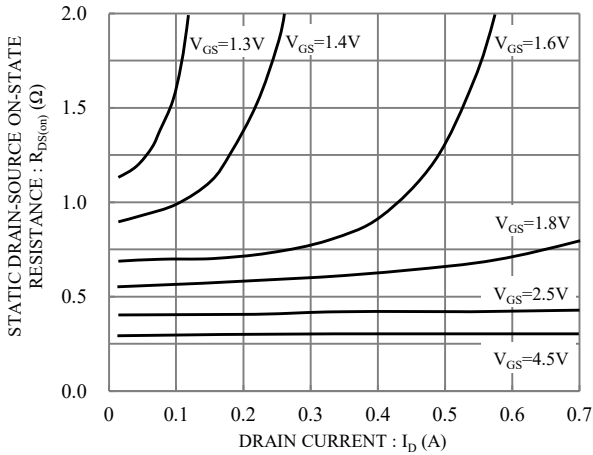


Fig.3 Static drain-source on-state resistance vs. drain current

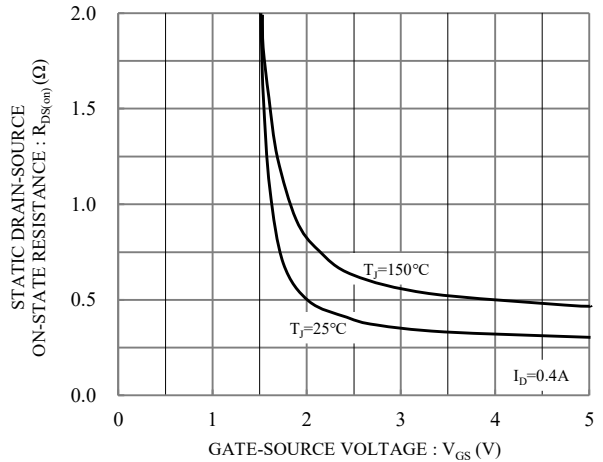


Fig.4 Static drain-source on-state resistance vs. gate-source voltage

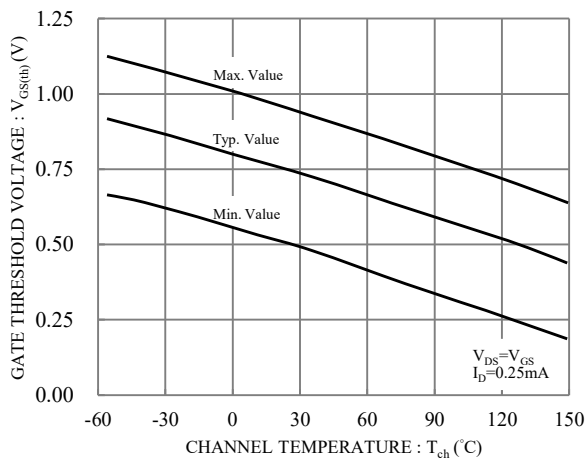


Fig.5 Gate threshold voltage vs. channel temperature

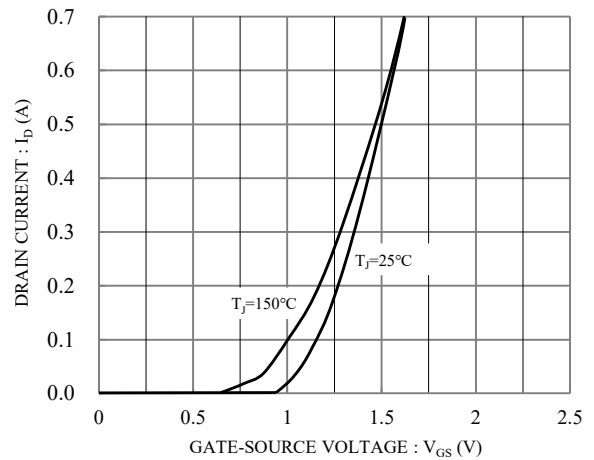


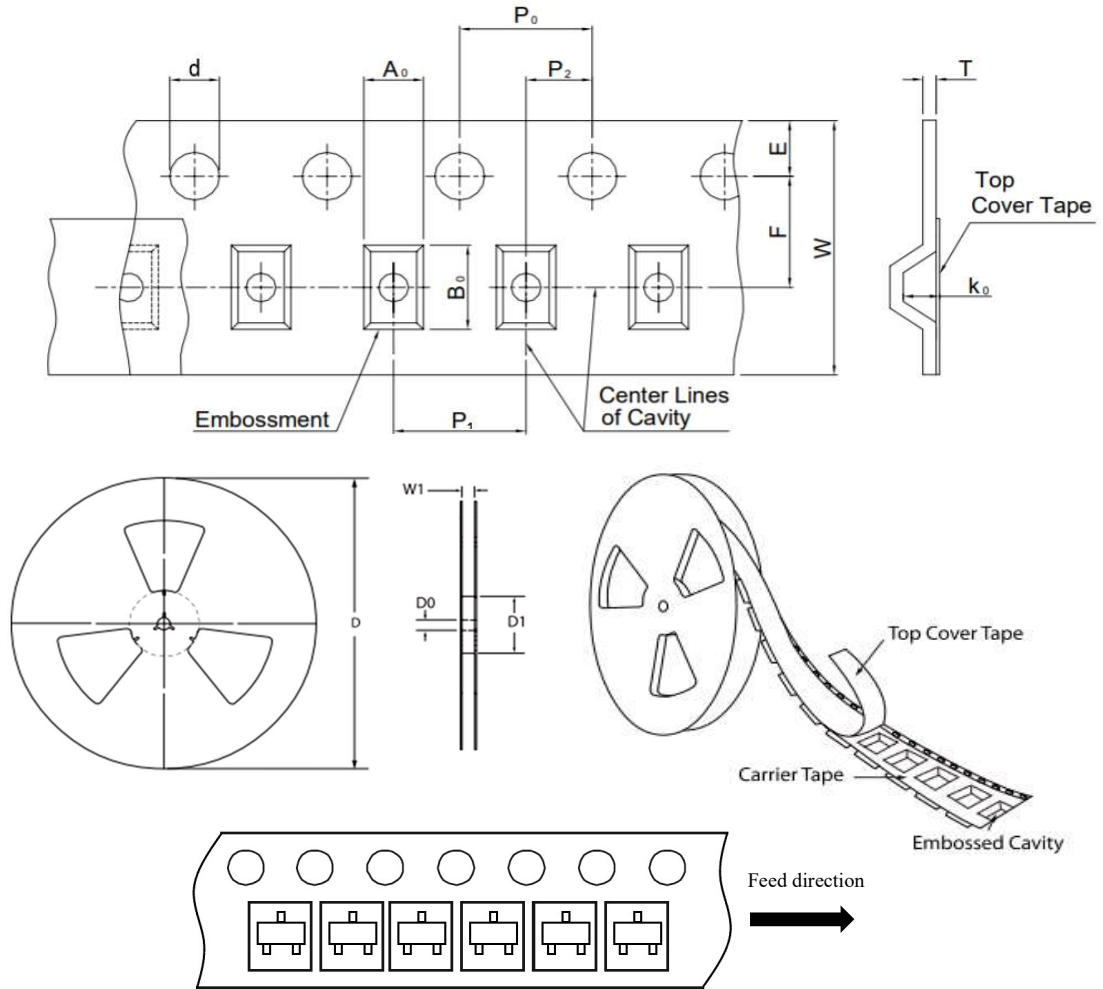
Fig.6 Static drain-source on-state resistance vs. gate-source voltage



SM290KWTH

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	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	W1	MAX. 14.50

ORDER INFORMATION

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

MARKING CODE

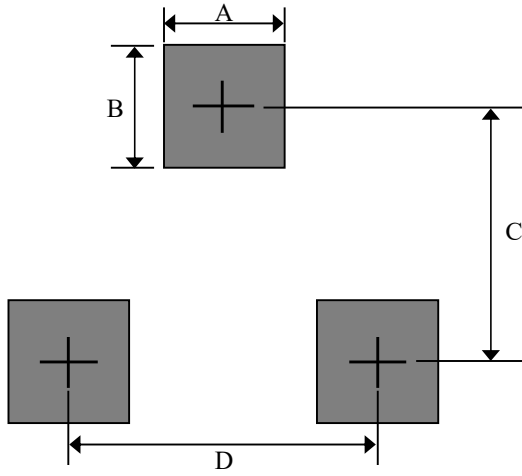
Part Number	Marking Code
SM290KWTH	ME



SM290KWH

N-Channel Enhancement Mode Field Effect Transistor

SUGGESTED SOLDER PAD LAYOUT



Unit : mm

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