

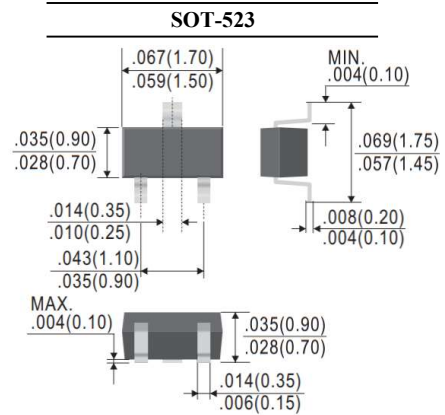
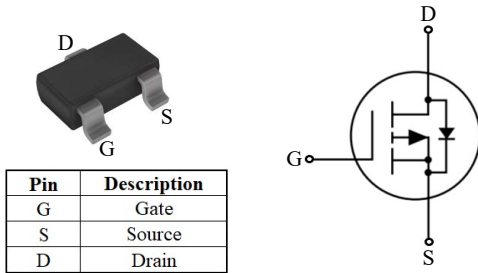


# SM0421KWTH

## P-Channel Enhancement Mode Field Effect Transistor

### FEATURES

· Suffix "H" indicates Halogen-free parts, ex. SM0421KWTH



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	$V_{GSS}$	$\pm 10$	V
Drain Current	$I_D$	-350 -255	mA
		$T_A = 25^\circ\text{C}$ $T_A = 85^\circ\text{C}$	
Peak Pulse Drain Current	$I_{DM}$	-1.4	A
Total Power Dissipation (Note 1)	$P_{tot}$	250	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	600	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$

Note :

1. Surface Mounted on "1 X 1" FR4 Board

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

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain Source Breakdown Voltage	$I_D = -250\mu\text{A}$	$V_{(BR)DSS}$	-20	-	-	V
Zero Gate Voltage Drain Current	$V_{DS} = -20\text{V}$	$I_{DSS}$	-	-	-0.1	$\mu\text{A}$
Gate Source Leakage Current	$V_{GS} = \pm 10\text{V}$	$I_{GSS}$	-	-	$\pm 10$	$\mu\text{A}$
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	$V_{GS(th)}$	-0.45	-	-0.90	V
Static Drain Source On-Resistance	$V_{GS} = -4.5\text{V}, I_D = -350\text{mA}$ $V_{GS} = -2.5\text{V}, I_D = -300\text{mA}$	$R_{DS(on)}$	-	-	0.9 1.0	$\Omega$
Forward Transconductance	$V_{DS} = -5\text{V}, I_D = -350\text{mA}$	$ g_{fs} $	-	1	-	S
<b>Dynamic</b>						
Input Capacitance	$V_{GS} = 0\text{V}, V_{DS} = -10\text{V}, f = 1\text{MHz}$	$C_{iss}$	-	55	-	pF
Output Capacitance		$C_{oss}$	-	16	-	
Reverse Transfer Capacitance		$C_{rss}$	-	6	-	
Turn-On Delay Time	$V_{GS} = -4.5\text{V}, V_{DD} = -10\text{V},$ $I_D = -350\text{mA}, R_G = 10\Omega$	$t_{d(on)}$	-	5	-	ns
Rise Time		$t_r$	-	3	-	
Turn-Off Delay Time		$t_{d(off)}$	-	14	-	
Fall time		$t_f$	-	5	-	
<b>Drain-Source Body Diode</b>						
Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = -150\text{mA}$	$V_{SD}$	-	-	-1.2	V



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### RATINGS AND CHARACTERISTIC CURVES

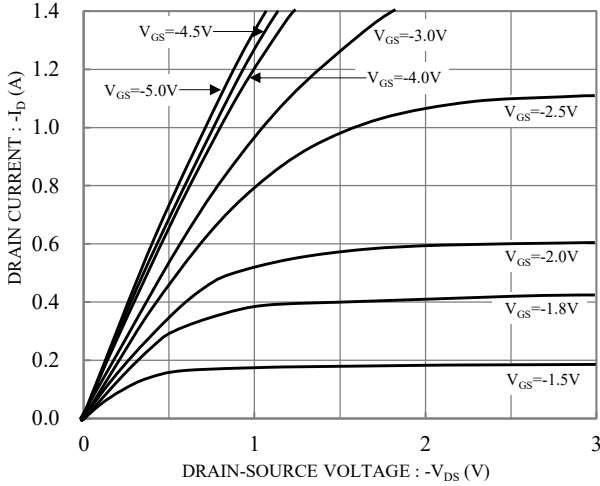


Fig.1 Typical output characteristics

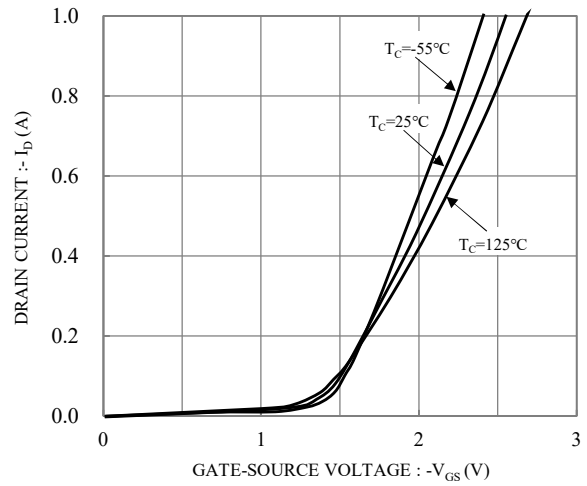


Fig.2 Typical transfer characteristics

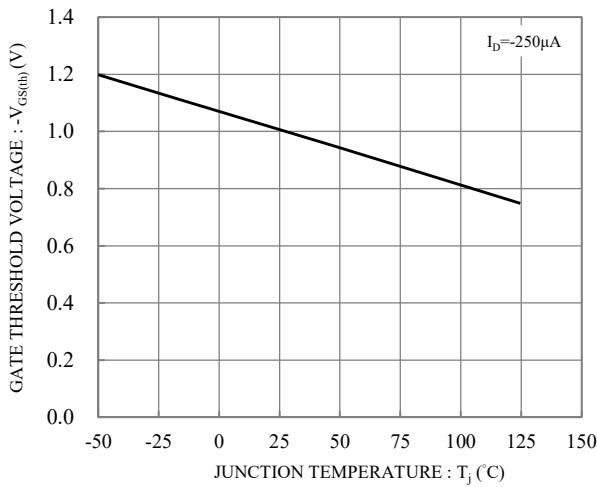


Fig.3 Gate threshold voltage vs. Junction temperature

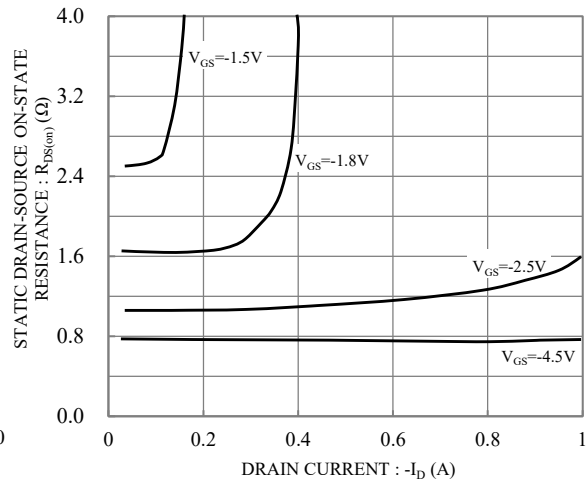


Fig.4 Static drain-source on-state resistance vs. drain current

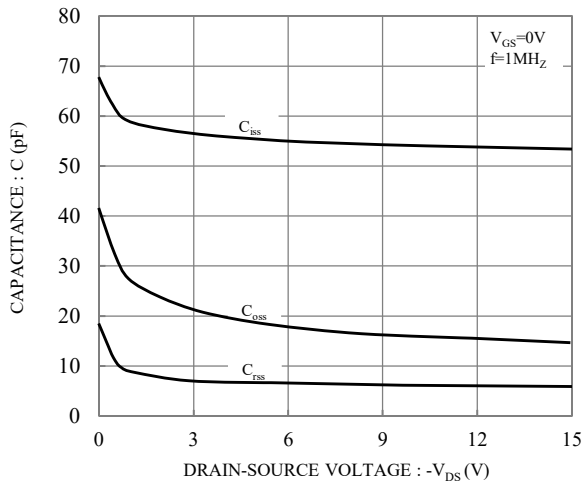


Fig.5 Typical transfer characteristics

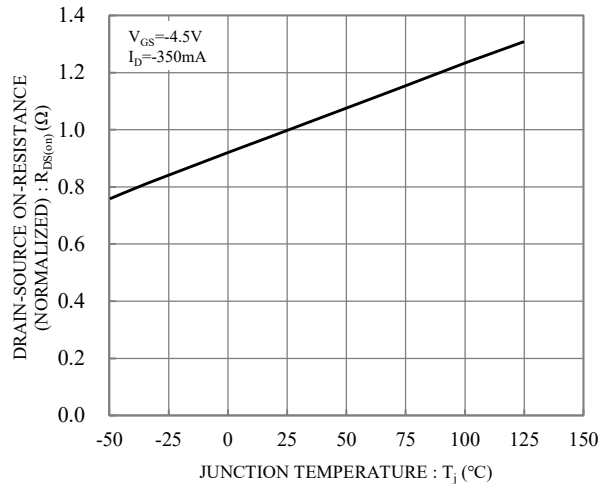


Fig.6 On-Resistance Variation with Temperature