

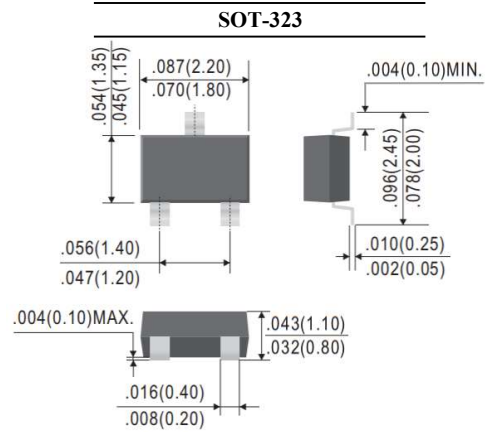
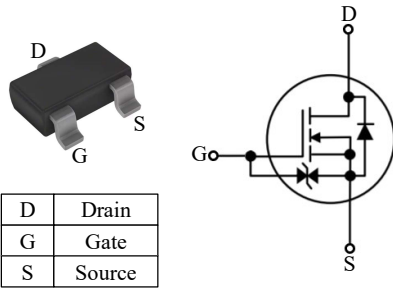


# SM06N2UKWH

## N-Channel Enhancement Mode Field Effect Transistor

### FEATURES

- Extremely Low Threshold Voltage
- ESD Protected
- Suffix "H" indicates Halogen-free parts, ex. SM06N2UKWH



Dimensions in inch and (millimeter)

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	0.5	A
Peak Drain Current (Note 1)	$I_{DM}$	1.4	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient (Note 2)	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{stg}$	- 55 to + 150	$^\circ\text{C}$

Note :

1. Pulse Width  $\leq 100\mu\text{s}$ , Duty Cycle  $\leq 2\%$ , Repetitive rating, pulse width limited by junction temperature  $T_{J(MAX)}=150^\circ\text{C}$ .
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



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

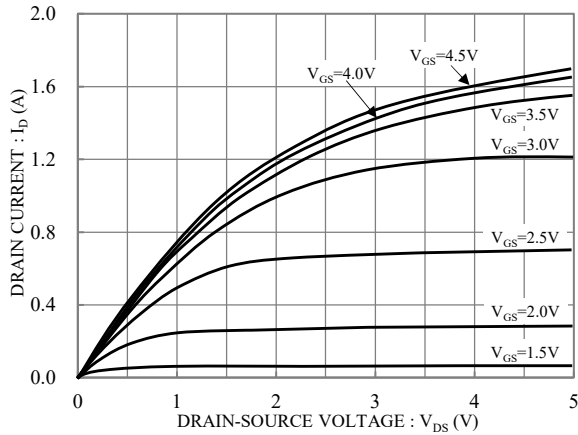
Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain Source Breakdown Voltage	$I_D = 250\mu\text{A}$	$BV_{DSS}$	60	-	-	V
Zero Gate Voltage Drain Current	$V_{DS} = 48\text{V}$	$I_{DSS}$	-	-	0.1	$\mu\text{A}$
Gate Source Leakage Current	$V_{GS} = \pm 20\text{V}$	$I_{GSS}$	-	-	$\pm 5$	$\mu\text{A}$
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	$V_{GS(th)}$	0.5	-	1.0	V
Static Drain Source On-Resistance	$V_{GS} = 4.5\text{V}, I_D = 0.5\text{A}$	$R_{DS(on)}$	-	-	2.0	$\Omega$
	$V_{GS} = 2.5\text{V}, I_D = 0.2\text{A}$		-	-	2.4	
	$V_{GS} = 1.8\text{V}, I_D = 0.1\text{A}$		-	-	3.5	
Forward Transfer Admittance	$V_{DS} = 10\text{V}, I_D = 1.4\text{A}$	$g_{fs}$	-	750	-	mS
<b>Dynamic</b>						
Total Gate Charge	$V_{DS} = 25\text{V}, I_D = 1\text{A}, V_{GS} = 4.5\text{V}$	$Q_g$	-	0.8	-	nC
			-	1.3	-	
			-	0.5	-	
Gate-Source Charge	$V_{DS} = 25\text{V}, I_D = 1\text{A}, V_{GS} = 10\text{V}$	$Q_{gs}$	-	0.5	-	nC
Gate-Drain Charge		$Q_{gd}$	-	0.4	-	
Input Capacitance		$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	$C_{iss}$	-	49.0	
Output Capacitance	$C_{oss}$		-	10.0	-	
Reverse Transfer Capacitance	$C_{rss}$		-	7.5	-	
Turn-On Delay Time	$V_{DS} = 10\text{V}, V_{GS} = 4.5\text{V}, I_D = 1\text{A}, R_G = 51\Omega$	$t_{d(on)}$	-	13	-	ns
Rise Time		$t_r$	-	13	-	
Turn-Off Delay Time		$t_{d(off)}$	-	8	-	
Fall time		$t_f$	-	5	-	
<b>Drain-Source Body Diode</b>						
Diode Forward Voltage	$I_S = 0.3\text{A}$	$V_{SD}$	-	-	1.2	V
Reverse Recovery Time	$I_S = 1\text{A}, di/dt = 100\text{A}/\mu\text{s}$	$t_{rr}$	-	9	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	4	-	nC



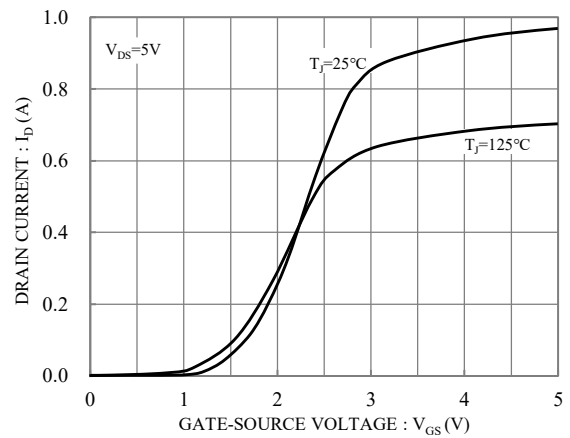
# SM06N2UKWH

## N-Channel Enhancement Mode Field Effect Transistor

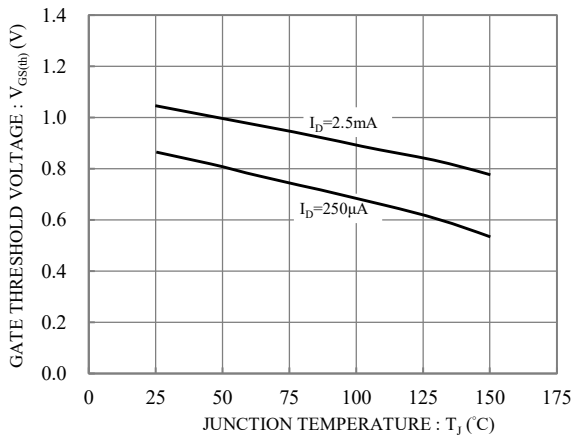
### RATINGS AND CHARACTERISTIC CURVES



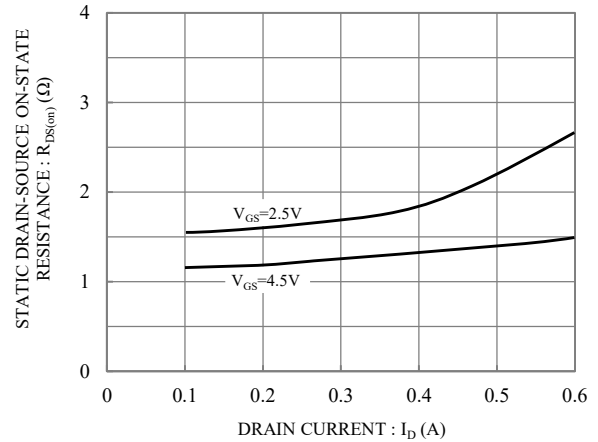
**Fig.1 Typical Output Characteristics**



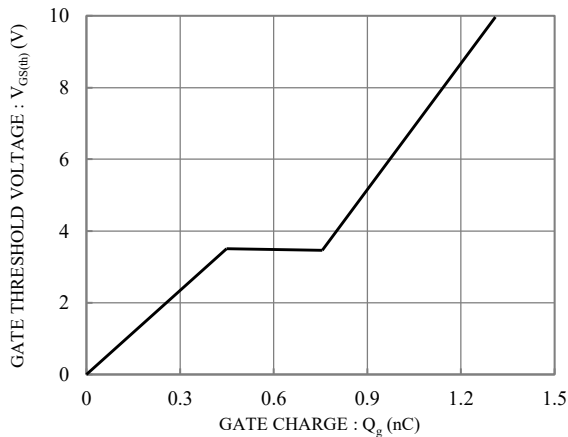
**Fig.2 Typical Transfer Characteristics**



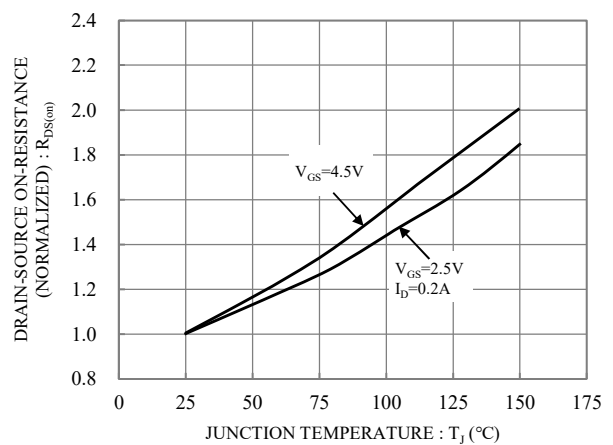
**Fig.3 Gate Threshold Voltage vs. Junction Temperature**



**Fig.4 Static Drain-Source On-state Resistance vs. Drain Current**



**Fig.5 Gate Charge Characteristics**

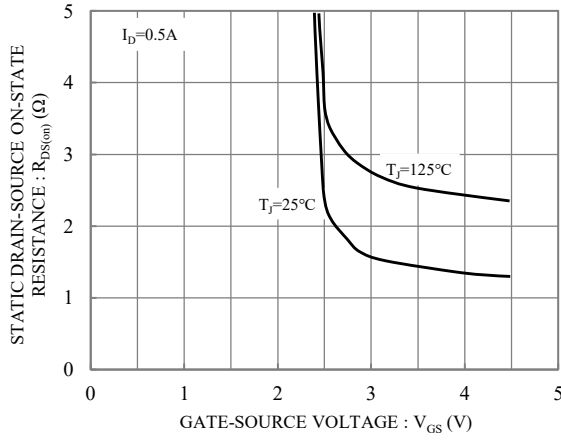


**Fig.6 On-Resistance Variation with Junction Temperature**

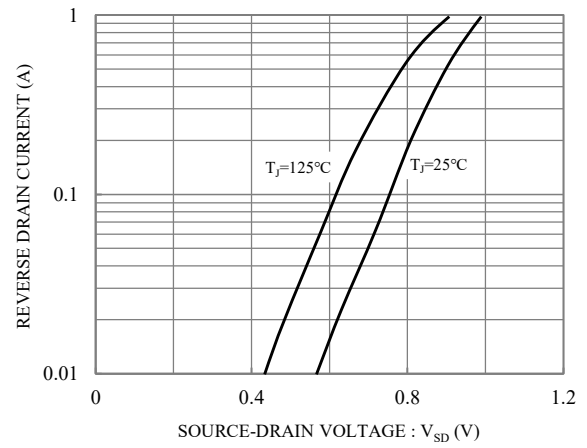


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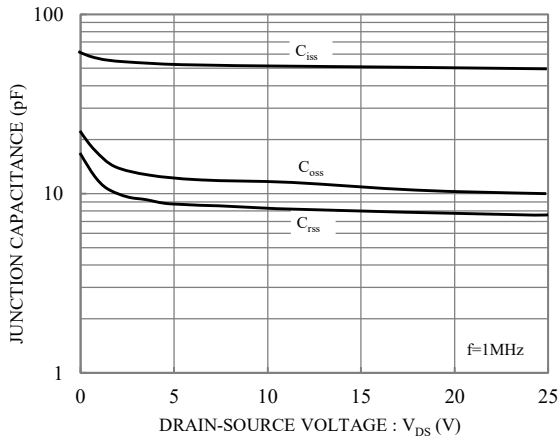
## N-Channel Enhancement Mode Field Effect Transistor



**Fig.7 Static Drain-Source On-state Resistance vs. Gate-Source Voltage**



**Fig.8 Typical Forward Characteristic**



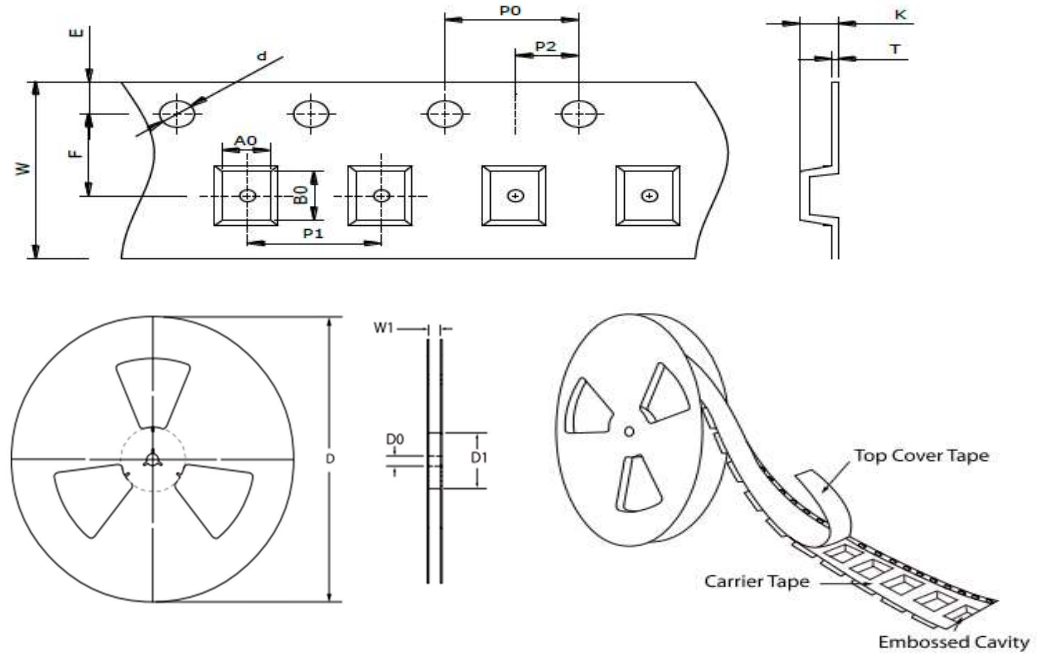
**Fig.9 Typical Junction Capacitance**



# SM06N2UKWH

## N-Channel Enhancement Mode Field Effect Transistor

### TAPE & REEL SPECIFICATION



Item	Symbol	SOT-323
Carrier width	A <sub>0</sub>	2.30 ± 0.10
Carrier length	B <sub>0</sub>	2.55 ± 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 <sub>0</sub>	13.00 ± 0.50
Reel inner diameter	D <sub>1</sub>	MIN. 50.00
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket hole pitch	P <sub>0</sub>	4.00 ± 0.10
Punch hole pitch	P <sub>1</sub>	4.00 ± 0.10
Embossment center	P <sub>2</sub>	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-323	7"	3,000

### MARKING CODE

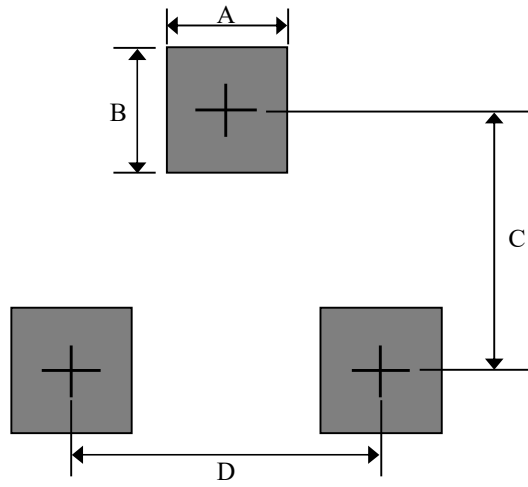
Part Number	Marking Code
SM06N2UKWH	LT



# SM06N2UKWH

*N-Channel Enhancement Mode Field Effect Transistor*

## **SUGGESTED SOLDER PAD LAYOUT**



Unit : mm

PACKAGE	A	B	C	D
SOT-323	0.80	0.80	1.60	1.30