

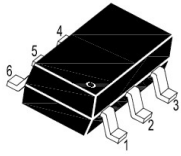


# SM620KDW H

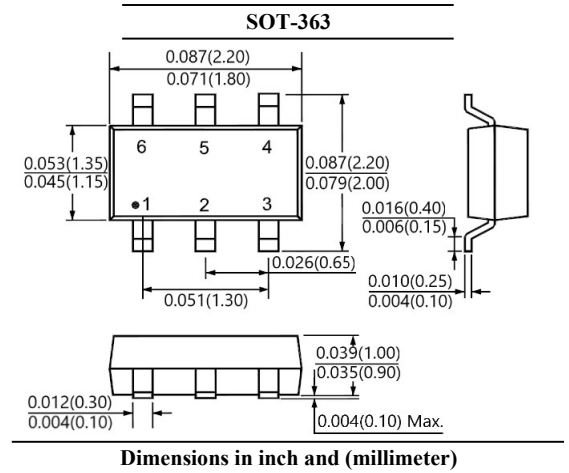
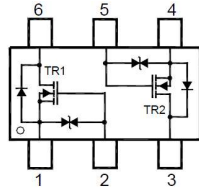
## Dual N-Channel Enhancement Mode Field Effect Transistor

### FEATURES

- Low Gate Threshold Voltage
- Fast Switching Speed
- ESD protected
- Suffix "H" indicates Halogen-free parts, ex. SM620KDW H



1.Source 2.Gate 3.Drain  
4.Source 5.Gate 6.Drain



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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current Steady State	$I_D$	350	mA	
Pulsed Drain Current (Note 1)	$I_{DM}$	1.4	A	
Power Dissipation (Note 2)	$P_D$	320	mW	
		(Note 3)		410
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	(Note 2)	390	$^\circ\text{C} / \text{W}$
		(Note 3)	305	
Operating and Storage Temperature Range	$T_J, T_{stg}$	- 55 to + 150	$^\circ\text{C}$	

Note:

1. Pulse Test: Pulse Width 100 s, Duty Cycle 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 minimum recommended pad layout.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



# SM620KDW

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

Parameter	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	$V_{DS} = 48\text{V}$	$I_{DSS}$	-	-	1	$\mu\text{A}$
Gate Source Leakage Current	$V_{GS} = \pm 20\text{V}$	$I_{GSS}$	-	-	$\pm 10$	$\mu\text{A}$
Gate Threshold Voltage	$I_D = 250\mu\text{A}$	$V_{GS(th)}$	0.50	0.88	1.00	V
Static Drain Source On-Resistance	$V_{GS} = 4.5\text{V}, I_D = 100\text{mA}$	$R_{DS(on)}$	-	-	2.0	$\Omega$
	$V_{GS} = 2.5\text{V}, I_D = 50\text{mA}$		-	-	2.5	
	$V_{GS} = 1.8\text{V}, I_D = 50\text{mA}$		-	-	3.2	
<b>Dynamic</b>						
Forward Transconductance	$V_{DS} = 5\text{V}, I_D = 0.4\text{A}$	$g_{fs}$	-	0.7	-	S
Gate Resistance	$V_{DS} = 0\text{V}, f = 1\text{MHz}$	$R_g$	-	38	-	$\Omega$
Total Gate Charge	$V_{GS} = 4.5\text{V}, V_{DS} = 30\text{V}, I_D = 1\text{A}$	$Q_g$	-	0.90	-	nC
			-	1.35	-	
Gate-Source Charge	$V_{GS} = 10\text{V}, V_{DS} = 30\text{V}, I_D = 1\text{A}$	$Q_{gs}$	-	0.43	-	nC
Gate-Drain Charge		$Q_{gd}$	-	0.38	-	
Input Capacitance		$C_{iss}$	-	49	-	
Output Capacitance	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$	$C_{oss}$	-	10	-	
Reverse Transfer Capacitance		$C_{rss}$	-	8	-	
Turn on Delay Time	$V_{DD} = 6\text{V}, I_D = 1\text{A}, V_{GS} = 4.5\text{V}, R_g = 51\Omega$	$t_{d(on)}$	-	13.0	-	ns
Turn on Rise Time		$t_r$	-	13.0	-	
Turn off Delay Time		$t_{d(off)}$	-	7.7	-	
Turn off Fall Time		$t_f$	-	4.6	-	
<b>Drain-Source Body Diode</b>						
Diode Forward Voltage	$I_S = 115\text{mA}$	$V_{SD}$	0.4	0.8	1.3	V
Continuous Source Current	-	$I_S$	-	-	0.35	A
Reverse Recovery Time	$I_S = 1\text{A}, di/dt = 100\text{A}/\mu\text{s}$	$t_{rr}$	-	9.0	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	3.7	-	nC



# SM620KDW

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### RATINGS AND CHARACTERISTIC CURVES

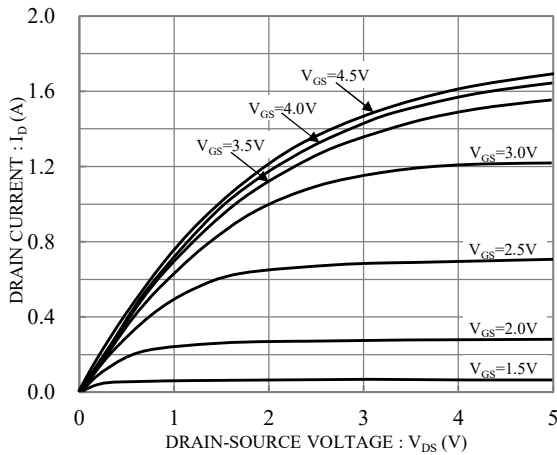


Fig.1 Typical Output Characteristics

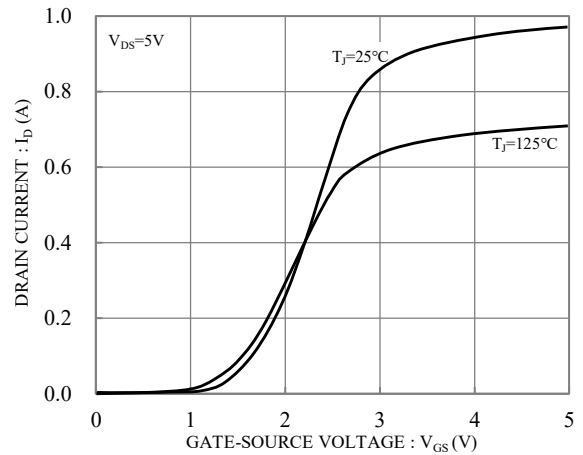


Fig.2 Typical Transfer Characteristics

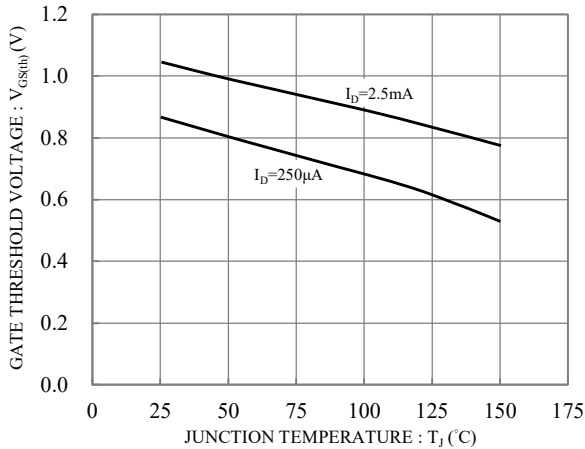


Fig.3 Gate Threshold Voltage vs. Junction Temperature

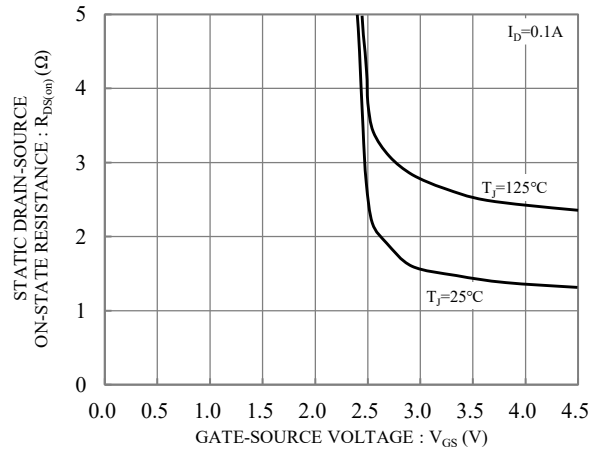


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

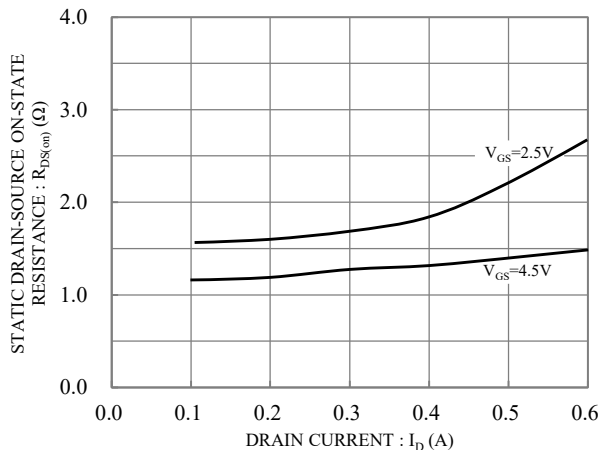


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

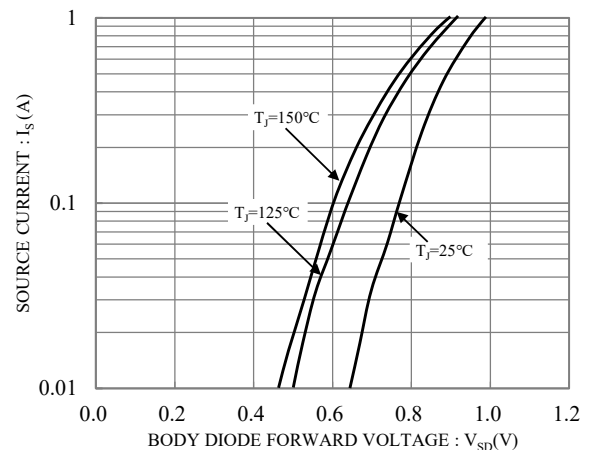
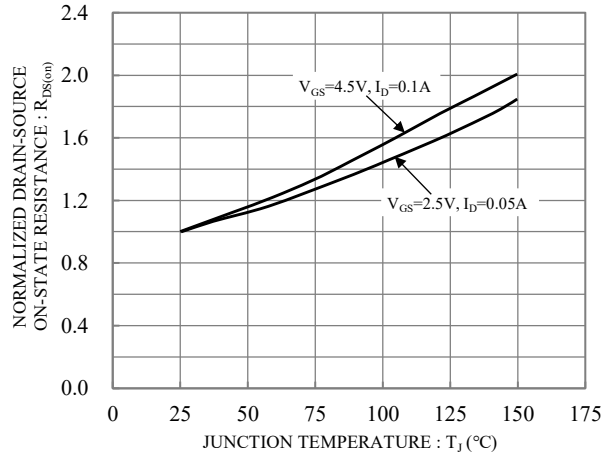


Fig.6 Body Diode Forward Voltage vs. Source Current

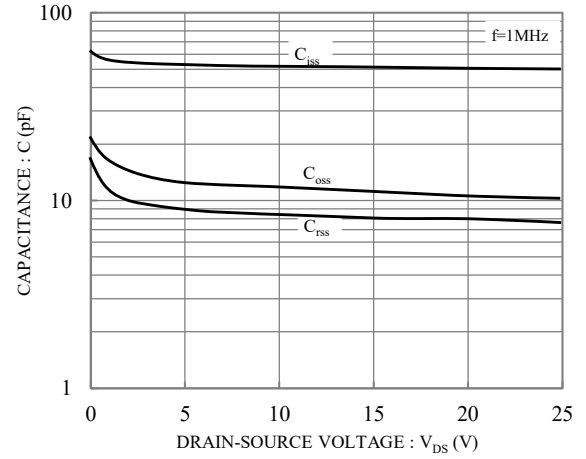


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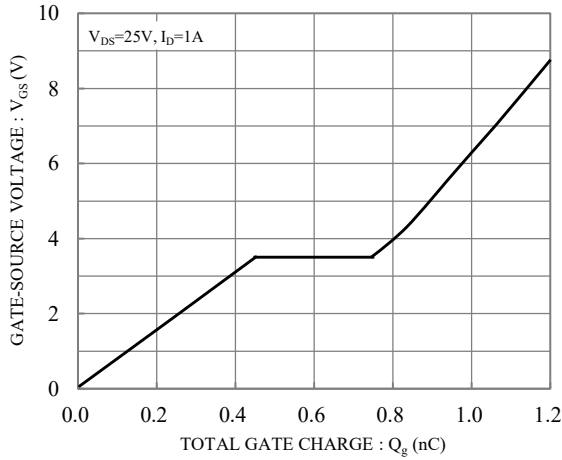
## Dual N-Channel Enhancement Mode Field Effect Transistor



**Fig.7 Drain-Source On-State Resistance vs. Junction Temperature**



**Fig.8 Capacitance vs. Drain-Source Voltage**



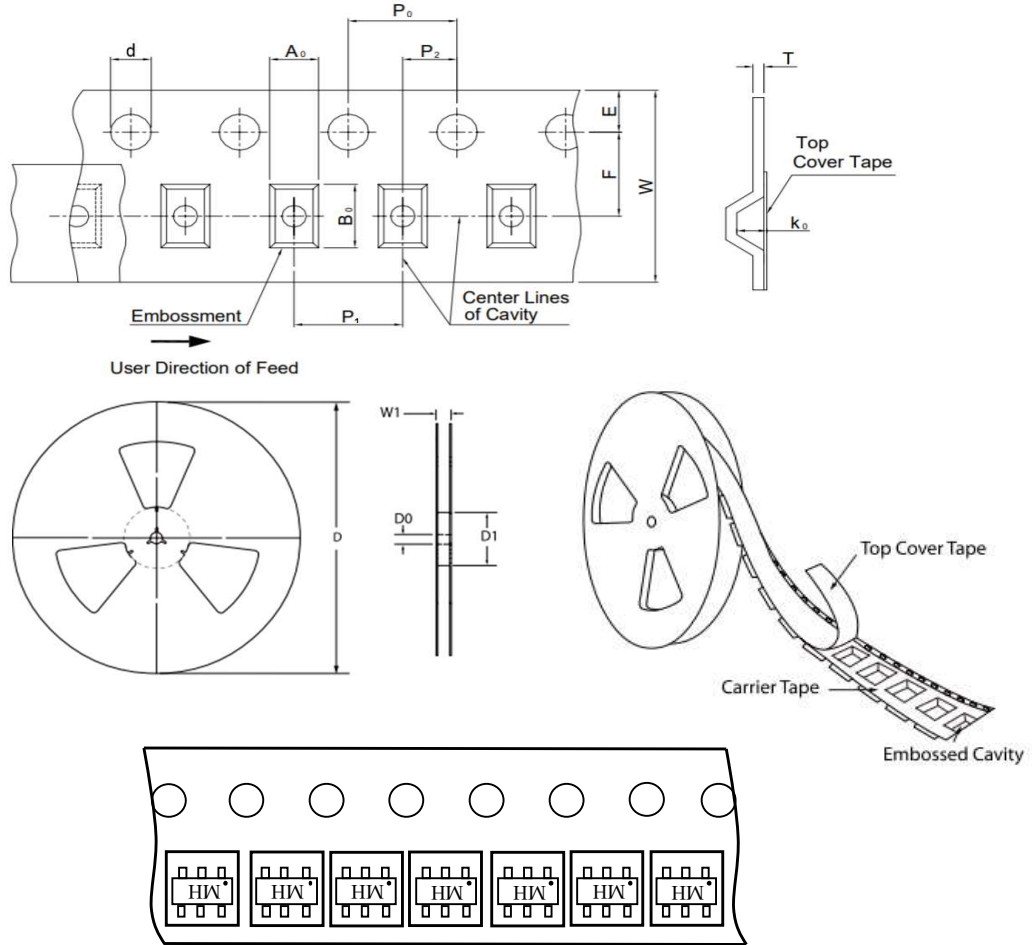
**Fig.9 Gate Charge Characteristics**



# SM620KDW H

## Dual N-Channel Enhancement Mode Field Effect Transistor

### TAPE & REEL SPECIFICATION



Item	Symbol	SOT-363
Carrier width	$A_0$	$2.30 \pm 0.10$
Carrier length	$B_0$	$2.30 \pm 0.10$
Carrier depth	$K_0$	$1.20 \pm 0.10$
Sprocket hole	$d$	$1.50 \pm 0.10$
Reel outside diameter	$D$	$178.00 \pm 2.00$
Feed hole width	$D_0$	$13.00 \pm 0.50$
Reel inner diameter	$D_1$	MIN. 50.00
Sprocket hole position	$E$	$1.75 \pm 0.10$
Punch hole position	$F$	$3.50 \pm 0.10$
Sprocket hole pitch	$P_0$	$4.00 \pm 0.10$
Punch hole pitch	$P_1$	$4.00 \pm 0.10$
Embossment center	$P_2$	$2.00 \pm 0.10$
Overall tape thickness	$T$	$0.60 \pm 0.10$
Tape width	$W$	$8.00 \pm 0.30$
Reel width	$W_1$	MAX. 10.00

### ORDER INFORMATION

Package	Reel Size	Quantity
SOT-363	7"	3,000

### MARKING CODE

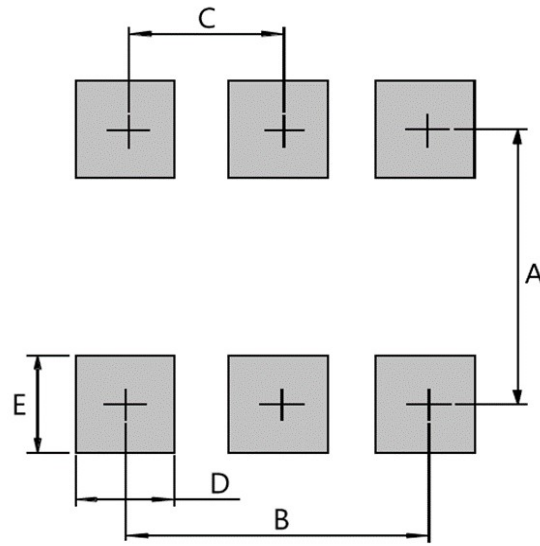
Part Number	Marking Code
SM620KDW H	MH



# SM620KDWH

Dual N-Channel Enhancement Mode Field Effect Transistor

## SUGGESTED SOLDER PAD LAYOUT



Unit : mm

PACKAGE	A	B	C	D	E
SOT-363	1.90	1.30	0.65	0.42	0.60