

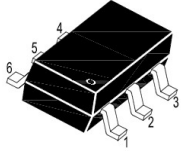


SM620KDW H

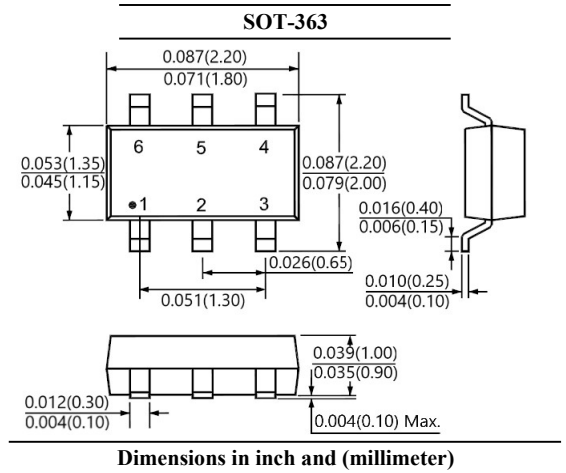
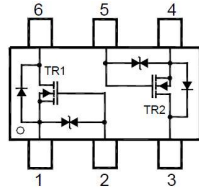
Dual N-Channel Enhancement Mode Field Effect Transistor

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}	± 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
		410 (Note 3)	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	390 (Note 2)	$^\circ\text{C} / \text{W}$
		305 (Note 3)	
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
Static						
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	μA
Gate Source Leakage Current	$V_{GS} = \pm 20\text{V}$	I_{GSS}	-	-	± 10	μA
Gate Threshold Voltage	$I_D = 250\mu\text{A}$	$V_{GS(th)}$	0.5	-	1.0	V
Static Drain Source On-Resistance	$V_{GS} = 4.5\text{V}, I_D = 100\text{mA}$	$R_{DS(on)}$	-	-	2.0	Ω
	$V_{GS} = 2.5\text{V}, I_D = 50\text{mA}$		-	-	2.5	
	$V_{GS} = 1.8\text{V}, I_D = 50\text{mA}$		-	-	3.2	
Dynamic						
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	-	Ω
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	-	
Drain-Source Body Diode						
Diode Forward Voltage	$I_S = 115\text{mA}$	V_{SD}	-	-	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

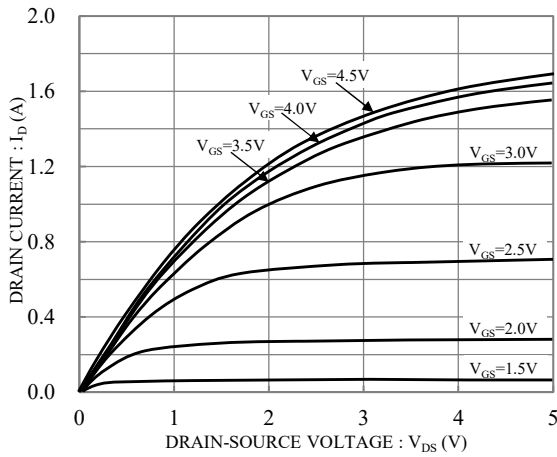


Fig.1 Typical Output Characteristics

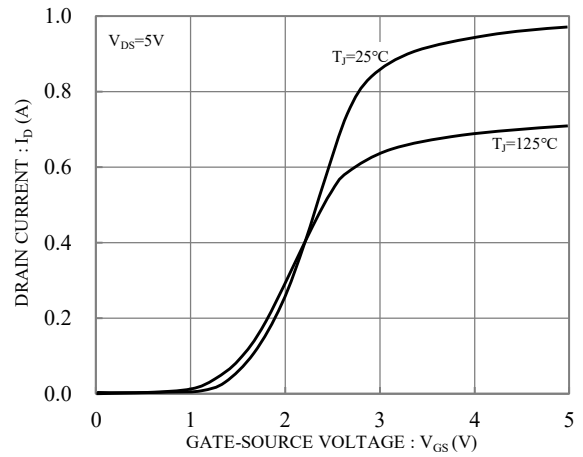


Fig.2 Typical Transfer Characteristics

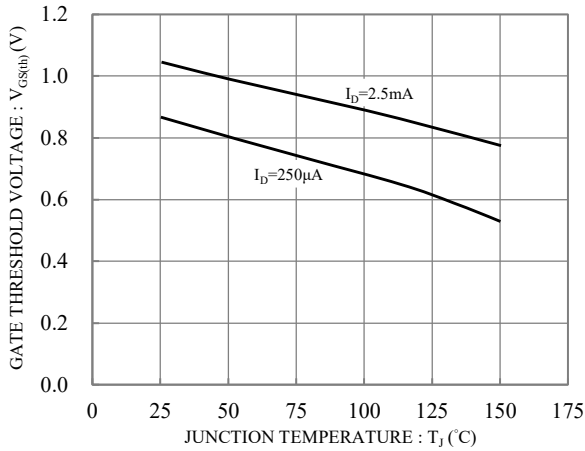


Fig.3 Gate Threshold Voltage vs. Junction Temperature

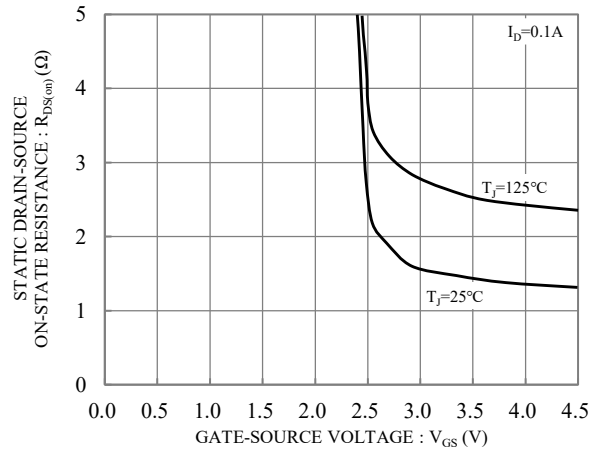


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

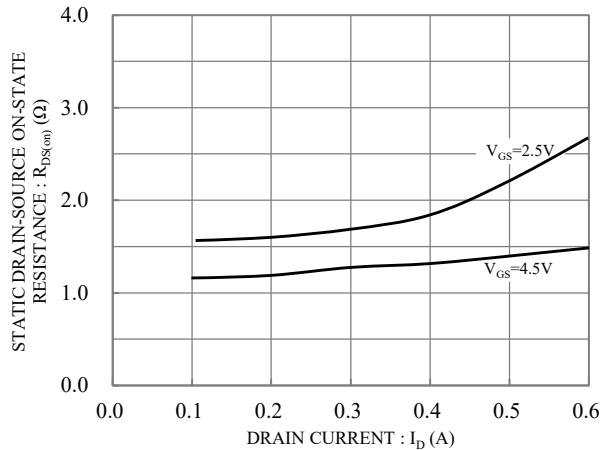


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

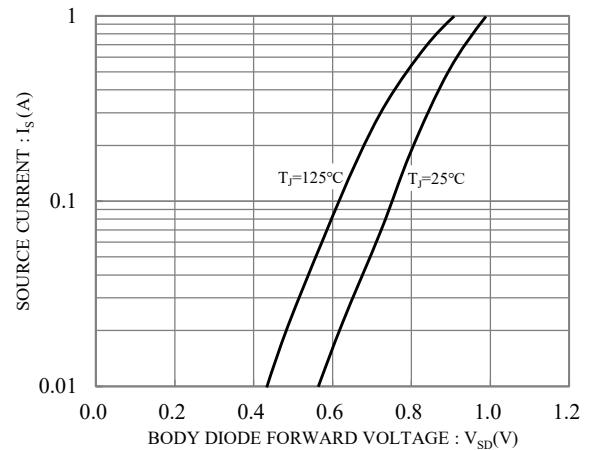


Fig.6 Body Diode Forward Voltage vs. Source Current



SM620KDW

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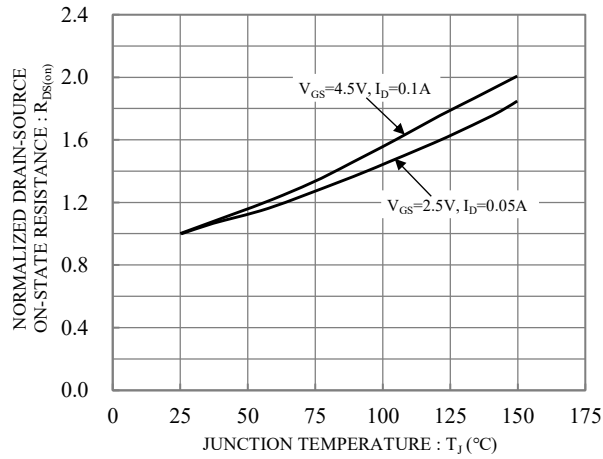


Fig.7 Drain-Source On-State Resistance vs. Junction Temperature

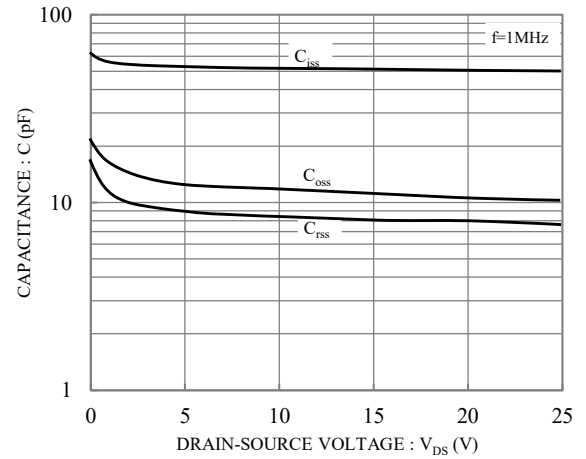


Fig.8 Capacitance vs. Drain-Source Voltage

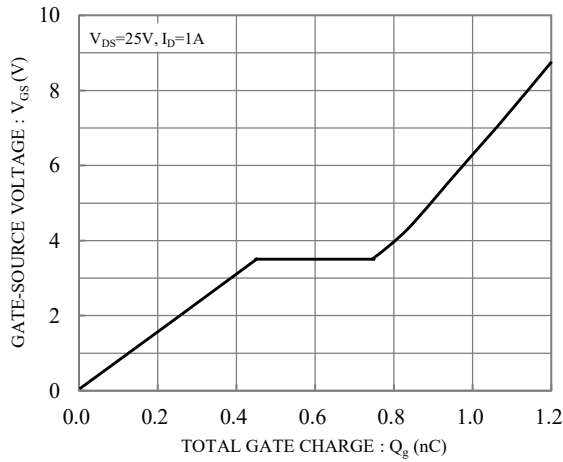


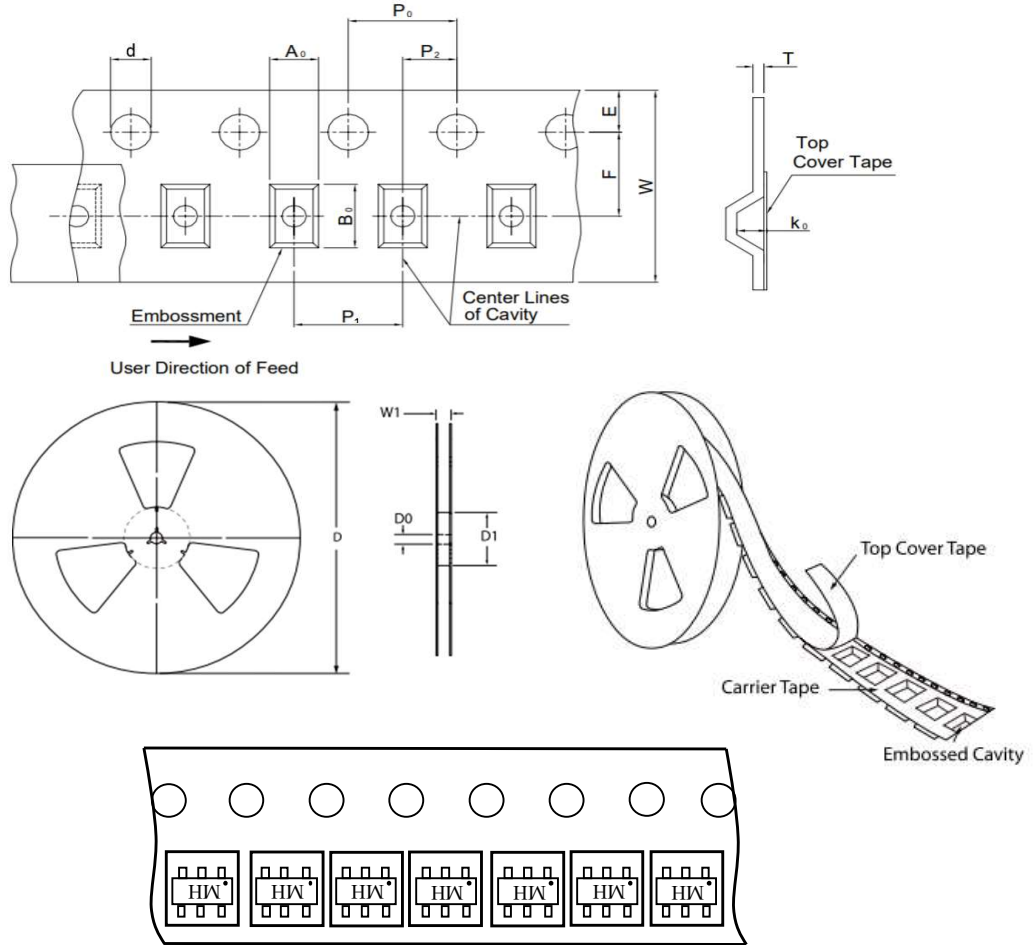
Fig.9 Gate Charge Characteristics



SM620KDW H

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TAPE & REEL SPECIFICATION



Item	Symbol	SOT-363
Carrier width	A_0	2.30 ± 0.10
Carrier length	B_0	2.30 ± 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	0.60 ± 0.10
Tape width	W	8.00 ± 0.30
Reel width	W_1	MAX. 10.00

ORDER INFORMATION

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

MARKING CODE

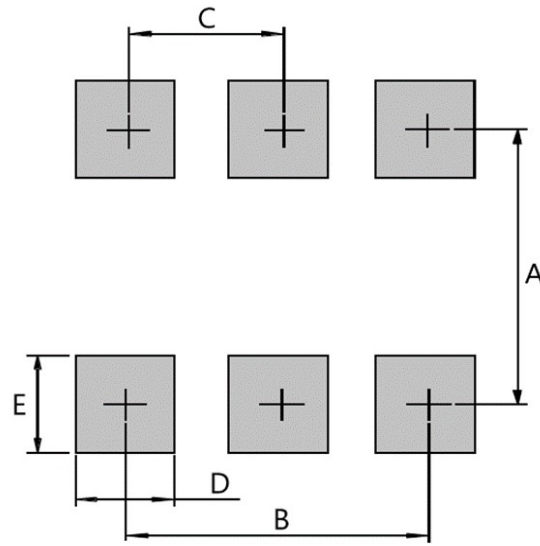
Part Number	Marking Code
SM620KDW H	MH



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