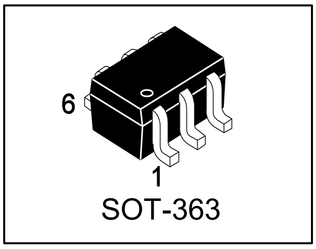
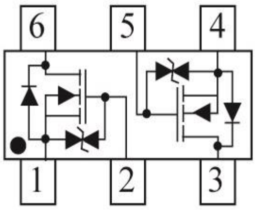
HM7002DW

Small Signal MOSFET
115 mAmps, 60 Volts N–Channel SOT-363



1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD Protected:1000V



2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
HM7002DW	702	3000/Tape&Reel
HM7002DW	702	10000/Tape&Reel

3. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	60	Vdc
Drain–Gate Voltage (RGS = 1.0 MΩ)	VDGR	60	Vdc
Drain Current	ID		mAdc
– Continuous TC = 25°C		±115	
TC = 100°C		±75	
– Pulsed (Note 1)	IDM	±800	
Gate–Source Voltage			
– Continuous	VGS	±20	Vdc
– Non–repetitive (tp⩽50μs)	VGSM	±40	Vdc

4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation,	PD	380	mW
Per Device		250	
FR−5 Board (Note 2) @ TA = 25ºC			
Derate above 25ºC		3.0	mW/ºC
Thermal Resistance, Junction–to–Ambient(Note 2)	RΘJA	328	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	ºC

1. Pulse Test: Pulse Width ⩽ 300 μs, Duty Cycle ⩽ 2.0%.
2. FR–5 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25℃)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 10μAdc)	VBRDSS	60	-	-	Vdc
Zero Gate Voltage Drain Current TJ = 25°C	IDSS	-	-	1.0	μAdc
(VGS = 0, VDS = 60 Vdc) TJ = 125°C		-	-	500	
Gate–Body Leakage Current, Forward (VGS = 20 Vdc)	IGSSF	-	-	1.0	μAdc
Gate–Body Leakage Current, Reverse (VGS = - 20 Vdc)	IGSSR	-	-	-1.0	μAdc

ON CHARACTERISTICS (Note 3)

Gate Threshold Voltage (VDS = VGS, ID = 250μAdc)	VGS(th)	1.0	-	2.0	Vdc
On–State Drain Current (VDS ⩾ 2.0 VDS(on), VGS = 10 Vdc)	ID(on)	500	-	-	mA
Static Drain–Source On–State Voltage	VDS(on)				Vdc
(VGS = 10 Vdc, ID = 500 mAdc)		-	-	3.75	
(VGS = 5.0 Vdc, ID = 50 mAdc)		-	-	0.375	
Static Drain–Source On–State Resistance	RDS(on)				Ohms
(VGS = 10 Vdc, ID = 500 mAdc) TC = 25°C		-	-	7.5	
TC = 125°C		-	-	13.5	
(VGS = 5.0 Vdc, ID = 50 mAdc) TC = 25°C		-	-	7.5	
TC = 125°C		-	-	13.5	
Forward Transconductance (VDS⩾ 2.0 VDS(on), ID = 200 mAdc)	gfs	80	-	-	mmhos

DYNAMIC CHARACTERISTICS

Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Cibo	-	-	50	pF
Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Cobo	-	-	25	pF
Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Cibo	-	-	5.0	pF

SWITCHING CHARACTERISTICS

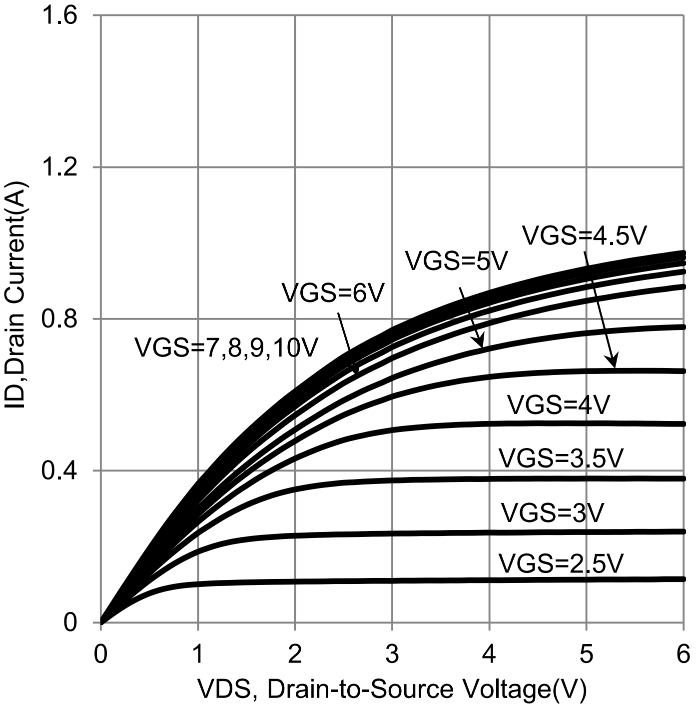
Turn-On Delay Time	(VDD = 25 Vdc , ID =500 mAdc, RG = 25Ω,RL = 50 Ω,Vgen = 10 V)	td(on)	-	-	20	ns
Turn-Off Delay Time		td(off)	-	-	40	

BODY–DRAIN DIODE RATINGS

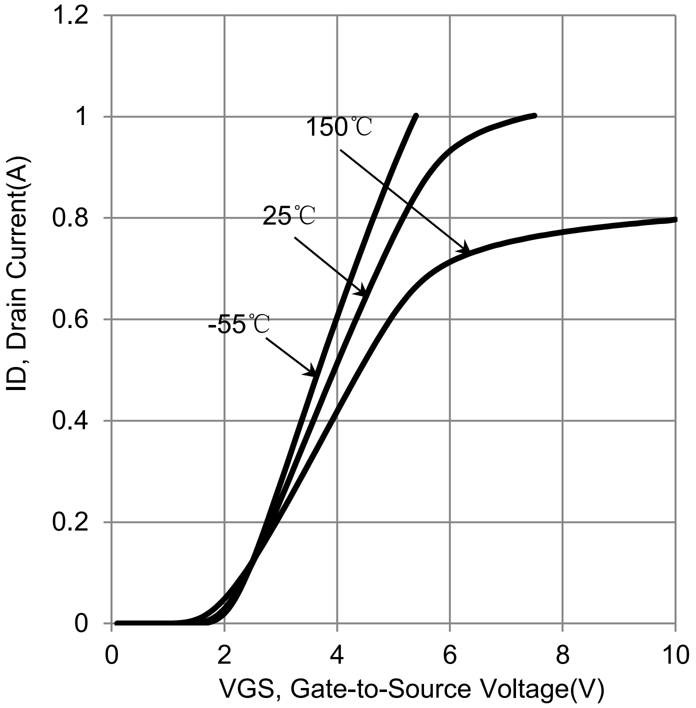
Diode Forward On–Voltage (IS = 115 mAdc, VGS = 0 V)	VSD	-	-	-1.5	Vdc
Source Current Continuous (Body Diode)	IS	-	-	-115	mAdc
Source Current Pulsed	ISM	-	-	-800	mAdc

3.Pulse Test: Pulse Width ⩽300 μs, Duty Cycle ⩽2.0%.

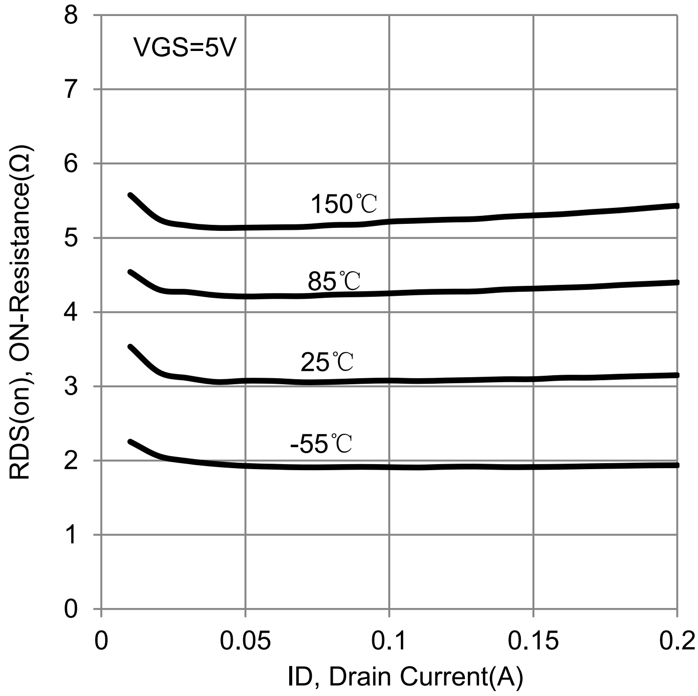
6. ELRCTRICAL CHARACTERISTICS CURVES



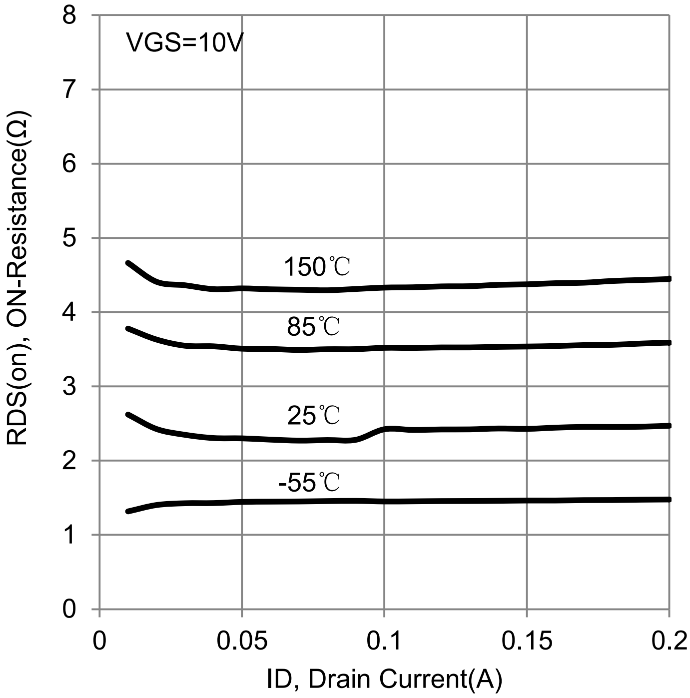
ON-Region Characteristics



Transfer Characteristicts

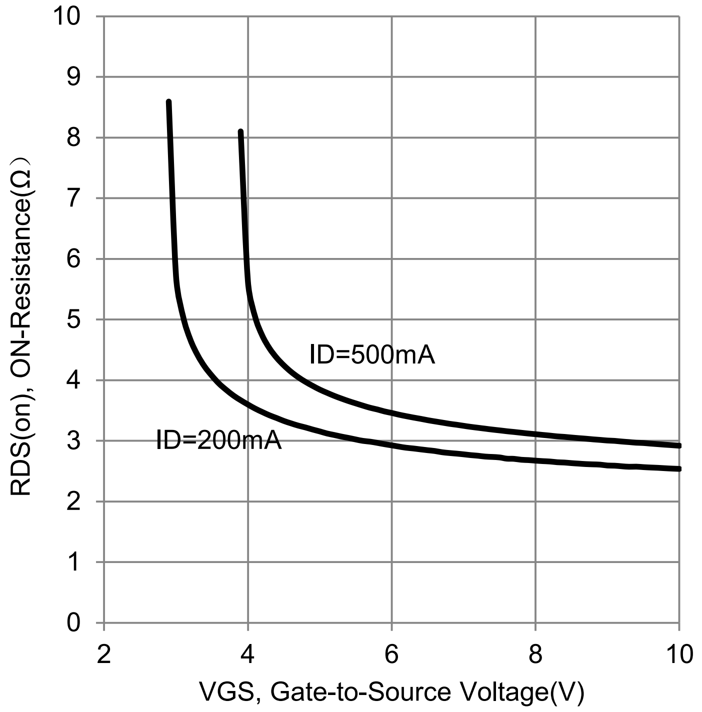


RDS(on) vs. ID

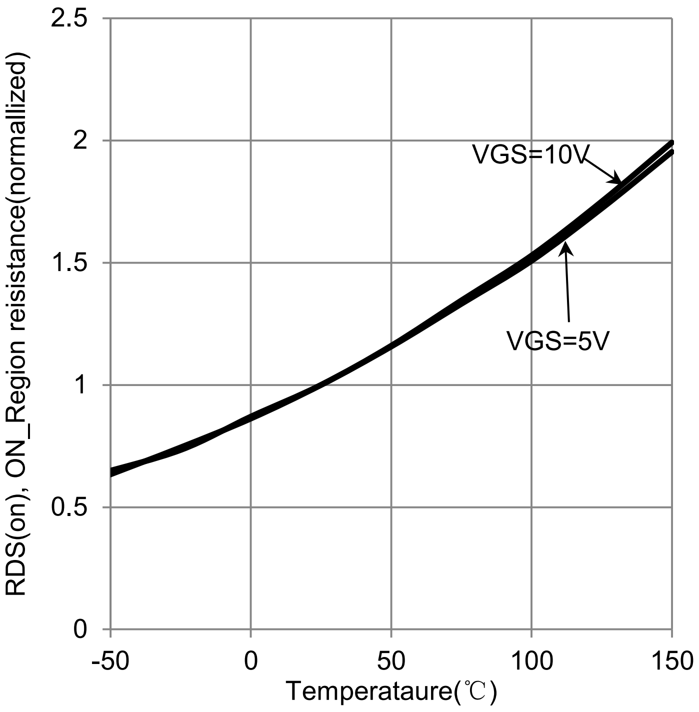


RDS(on) vs. ID

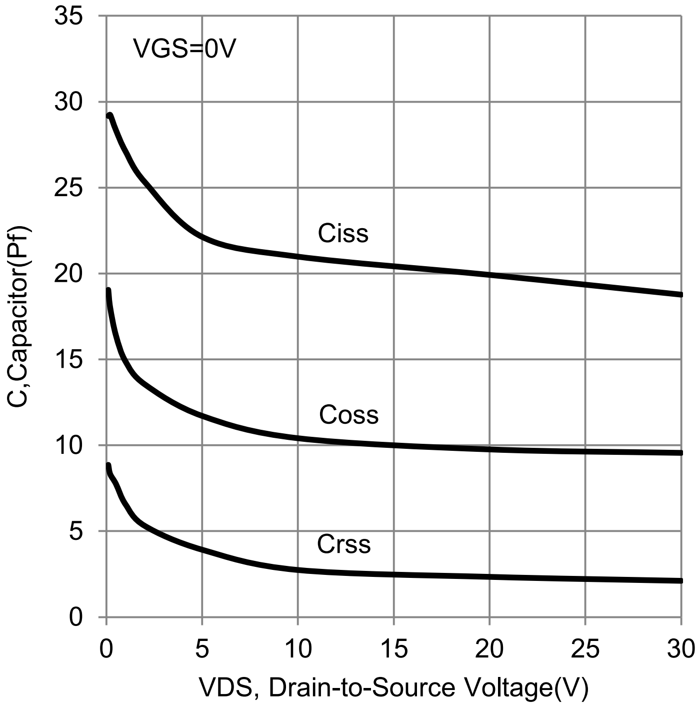
6. ELRCTRICAL CHARACTERISTICS CURVES（Con.)



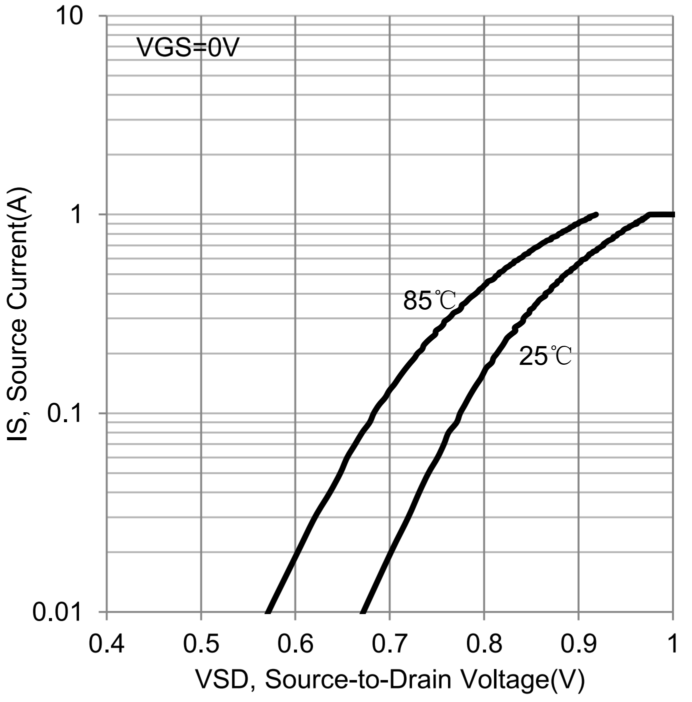
RDS(on) vs. VGS



RDS(on) vs. Temperature

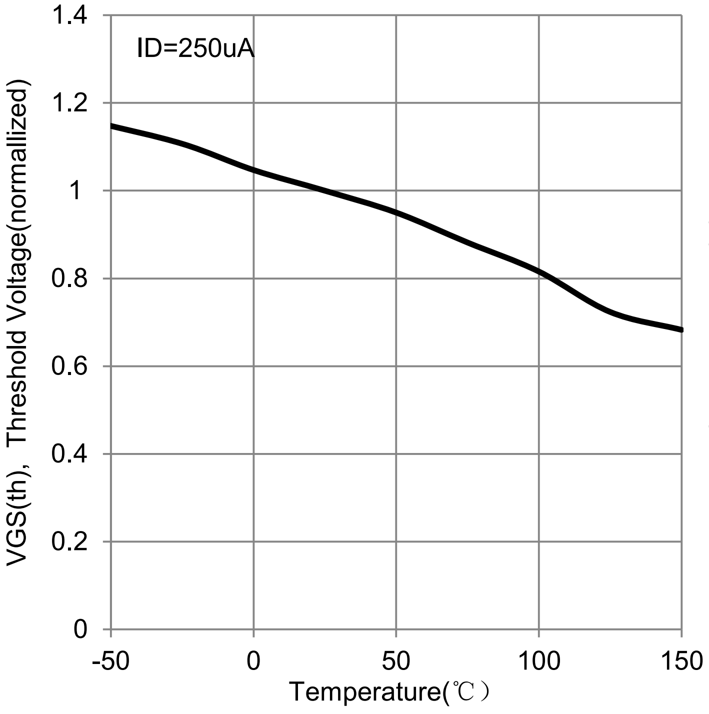


Capacitor vs.VDS

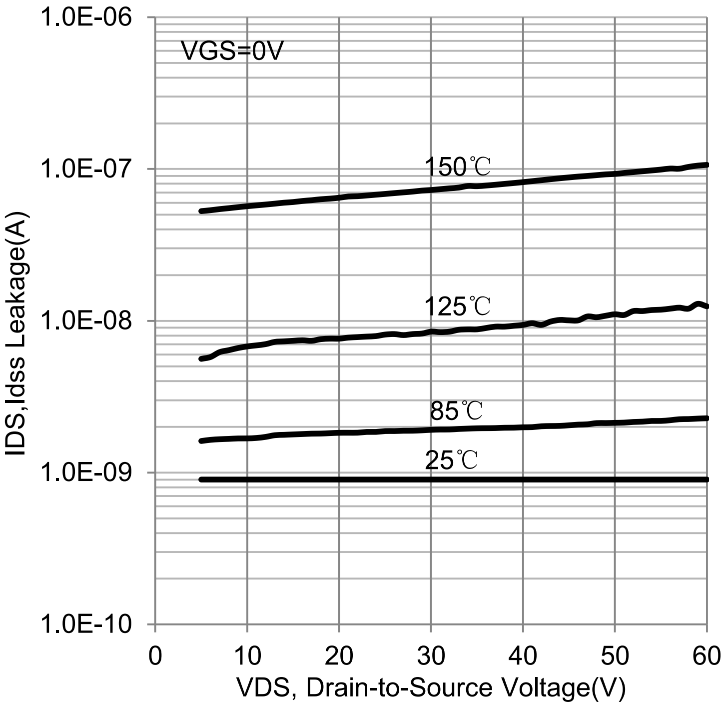


IS vs.VSD

6. ELRCTRICAL CHARACTERISTICS CURVES（Con.)



VGS(th) vs. Temperature

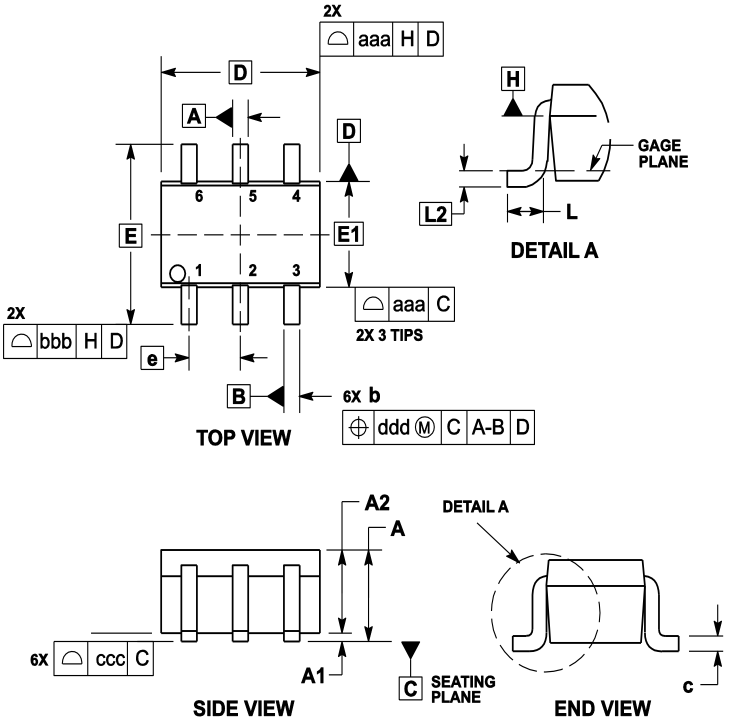


IDS vs. VDS

7.OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	0.043
A1	0.00	---	0.10	0	---	0.004
A2	0.70	0.90	1.00	0.027	0.035	0.039
b	0.15	0.20	0.25	0.006	0.008	0.01
C	0.08	0.15	0.22	0.003	0.006	0.009
D	1.80	2.00	2.20	0.07	0.078	0.086
E	2.00	2.10	2.20	0.078	0.082	0.086
E1	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018
L2	0.15 BSC			0.006 BSC		
aaa	0.15			0.01		
bbb	0.30			0.01		
ccc	0.10			0.00		
ddd	0.10			0.00		

8.SOLDERING FOOTPRINT