

**SuperMOS - SOT-363 -60V BV<sub>DSS</sub>, 3.5Ω R<sub>DS(on)</sub>, P-channel MOSFET**

**1. Description**

The BSS84DWQ-7(ES) is P-Channel enhancement MOS Field Effect Transistor. Uses advanced technology and design to provide excellent R<sub>DS(ON)</sub> with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product BSS84DWQ-7(ES) is Pb-free.

**2. Features**

- -60V, R<sub>DS(ON)</sub>=3.5Ω(Typ.) @V<sub>GS</sub>=-10V
- R<sub>DS(ON)</sub>=4.5Ω(Typ.) @V<sub>GS</sub>=-4.5V
- Fast Switching
- High density cell design for low R<sub>DS(on)</sub>
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

**3. Applications**

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

**4. Ordering Information**

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel size
BSS84DWQ-7(ES)	SOT-363	.84KZ	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

**5. Pin Configuration and Functions**

Pin	Function	Outline	Circuit Diagram
2/5	Gate		
1/4	Source		
6/3	Drain		

**6. Specification**

## Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$BV_{DSS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	-0.16
		$T_A=100^\circ\text{C}$	-0.10
Maximum Power Dissipation	$P_D$	0.23	W
Pulsed Drain Current	$I_{DM}$	-0.65	A
Operating Junction Temperature	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### Thermal resistance ratings

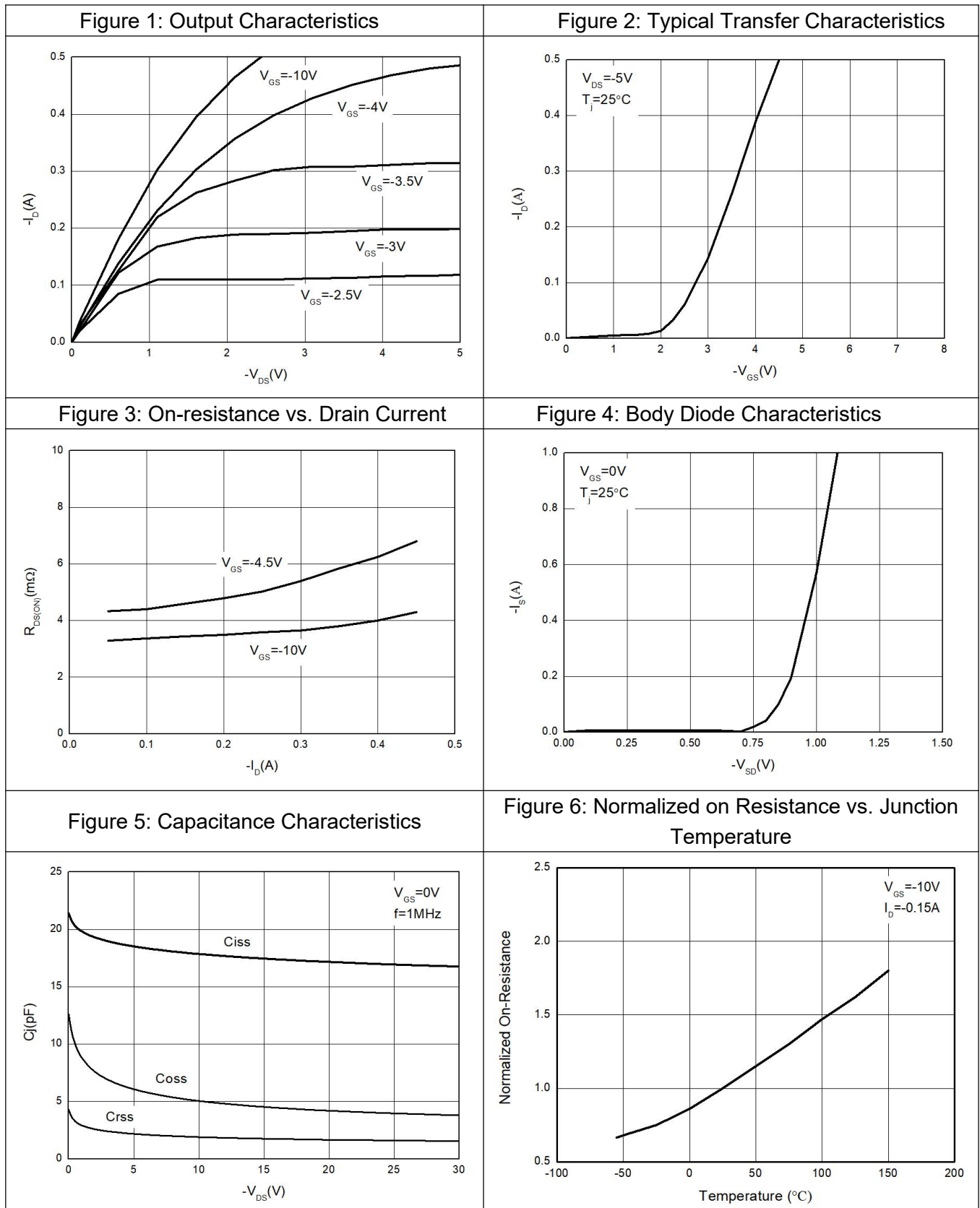
Single Operation			
Parameter	Symbol	Max	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	543	$^\circ\text{C}/\text{W}$

## Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=-60V$			-100	nA
Gate-to-source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 10$	$\mu A$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.6	-2.2	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-0.15A$		3.5	5.2	$\Omega$
		$V_{GS}=-4.5V, I_D=-0.1A$		4.5	6.3	
<b>CHARGES AND CAPACITANCES</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=-25V$ $f=1MHz$		17		pF
Output Capacitance	$C_{OSS}$			4		
Reverse Transfer Capacitance	$C_{RSS}$			1.6		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-10V, V_{DS}=-25V$ $I_D=-0.15A$		1.1		nC
Gate-to-Source Charge	$Q_{GS}$			0.3		
Gate-to-Drain Charge	$Q_{GD}$			0.2		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V, V_{DS}=-25V$ $I_D=-0.15A, R_G=6\Omega$		4.8		ns
Rise Time	$t_r$			19		
Turn-Off Delay Time	$t_{d(OFF)}$			52		
Fall Time	$t_f$			32		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_{SD}=-0.15A$	-0.45	-0.88	-1.5	V

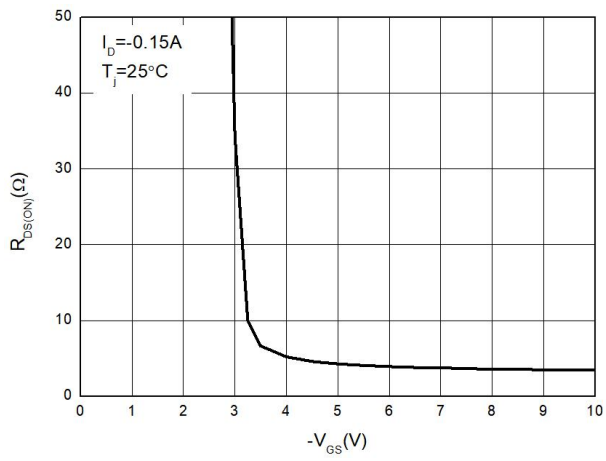
### 7. Typical Characteristics



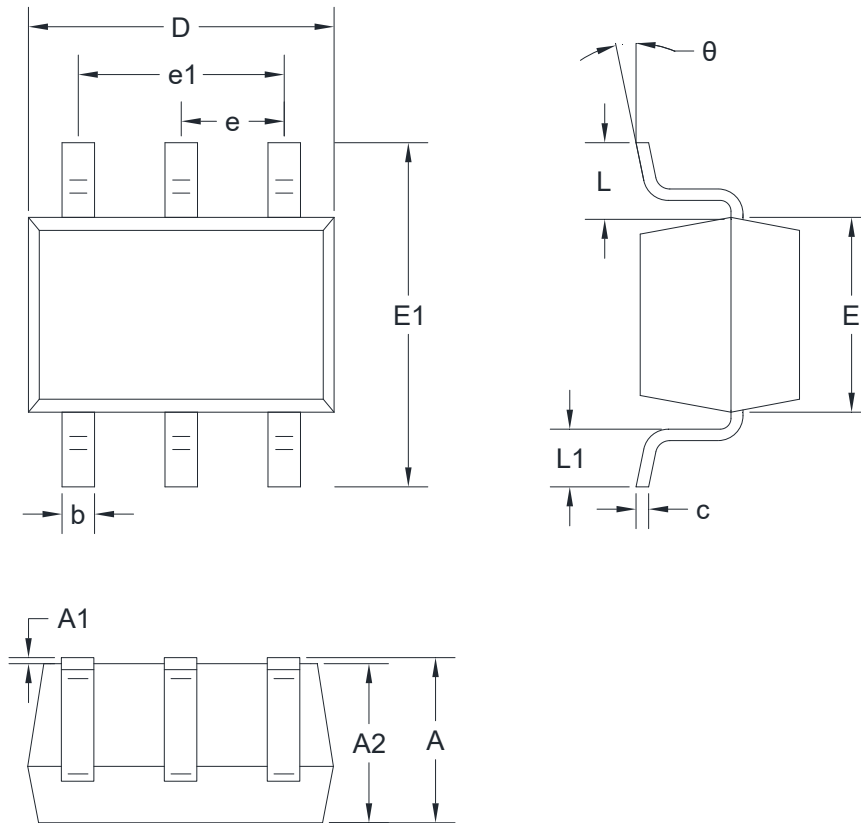
**BSS84DWQ-7(ES)**

Rev-1.2

Figure7: on-Resistance vs. Gate to Source



8. Dimension (SOT-363)



Dimensions in Millimeter					
SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	0.85	1.10	E1	2.10	2.45
A1	0.00	0.10	e	0.65TYP	
A2	0.85	1.00	e1	1.20	1.40
b	0.15	0.35	L	0.525TYP	
c	0.08	0.15	L1	0.26	0.46
D	2.00	2.20	theta	0°	8°
E	1.15	1.35			

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