

ESBSS84WT1G

Rev-1.1

SuperMOS - SOT-323 -60V BV_{DSS}, 3.5Ω R_{DS(on)}, P-channel MOSFET

1. Description

The ESBSS84WT1G is P-Channel enhancement MOS Field Effect Transistor. Uses advanced technology and design to provide excellent R_{DS(ON)} with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ESBSS84WT1G is Pb-free.

2. Features

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

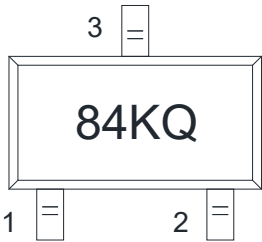
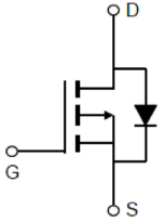
3. Applications

- 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
ESBSS84WT1G	SOT-323	84KQ	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate		
2	Source		
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}	± 20	V
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	-0.18	A
	$T_A = 100^\circ\text{C}$		-0.12	
Maximum Power Dissipation		P_D	0.30	W
Pulsed Drain Current		I_{DM}	-0.74	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	$R_{\theta JA}$	417	$^\circ\text{C/W}$

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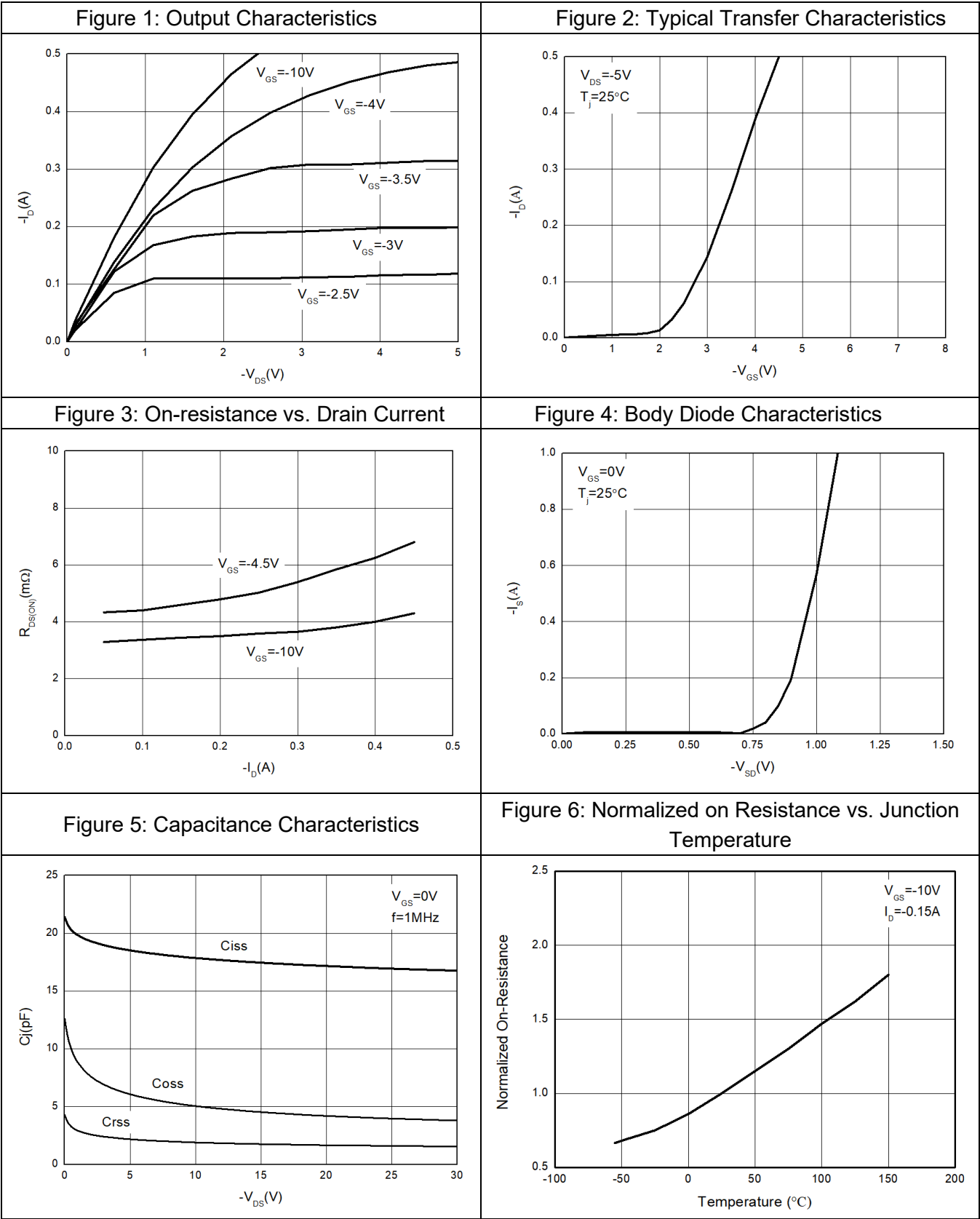
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Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-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} =±20V, V _{DS} =0V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =-250uA	-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	Ω
		V _{GS} =-4.5V, I _D =-0.1A		4.5	6.3	
CHARGES AND CAPACITANCES						
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} =-4.5V, V _{DS} =-25V I _D =-0.1A		1.1		nC
Gate-to-Source Charge	Q _{GS}			0.3		
Gate-to-Drain Charge	Q _{GD}			0.2		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =-10V, V _{DS} =-25V I _D =-0.1A, R _G =6Ω		4.8		ns
Rise Time	t _r			19		
Turn-Off Delay Time	t _{d(OFF)}			52		
Fall Time	t _f			32		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =-0.15A	-0.45	-0.88	-1.5	V

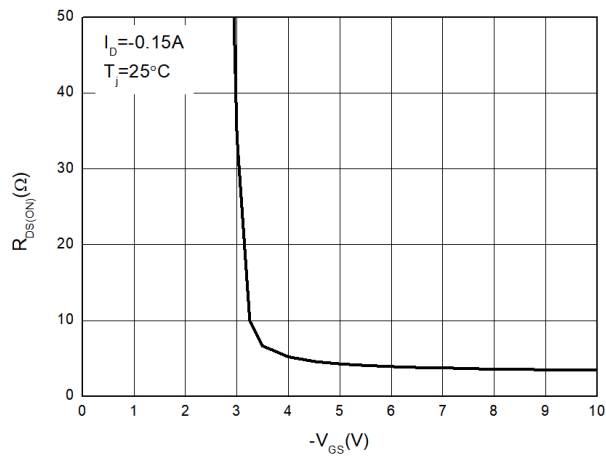
7. Typical Characteristics



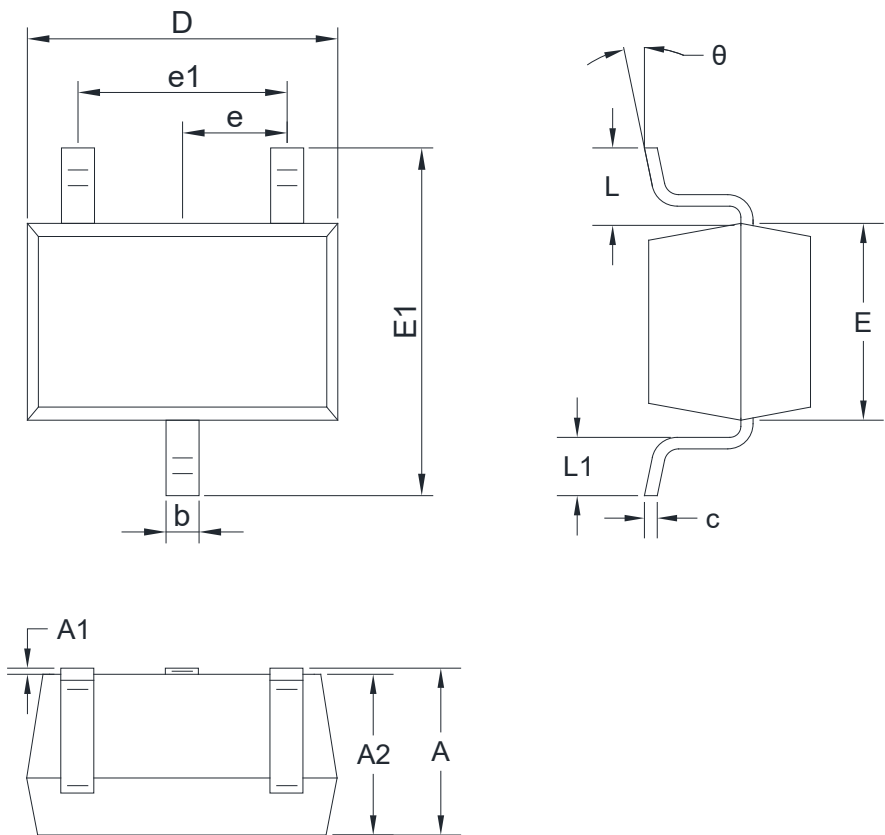
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Figure7: on-Resistance vs. Gate to Source



8. Dimension (SOT-323)



Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A	0.80	1.00	E1	2.05	2.35
A1	0.00	0.10	e	0.65 TYP	
A2	0.80	0.90	e1	1.20	1.40
b	0.20	0.40	L	0.45 REF	
c	0.08	0.15	L1	0.26	0.46
D	2.00	2.20	θ	0°	8°
E	1.15	1.35			

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