

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	BS170FTA
▶ Overseas	Part Number	BS170FTA
▶ Equivalent	Part Number	BS170FTA

EV is the abbreviation of name EVVO

N-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (mA)
60	2.8 at $V_{GS} = 10$ V	250

FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- Low Threshold: 2 V (typ.)
- Low Input Capacitance: 25 pF
- Fast Switching Speed: 25 ns
- Low Input and Output Leakage
- TrenchFET® Power MOSFET
- 1200V ESD Protection
- Compliant to RoHS Directive 2002/95/EC

BENEFITS

- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays

ABSOLUTE MAXIMUM RATINGS $T_A = 25$ °C, unless otherwise noted

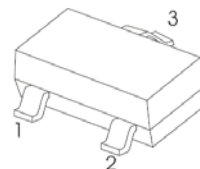
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C) ^b	$T_A = 25$ °C	I_D	250
	$T_A = 100$ °C		150
Pulsed Drain Current ^a	I_{DM}	800	mA
Power Dissipation ^b	$T_A = 25$ °C	P_D	0.30
	$T_A = 100$ °C		0.13
Maximum Junction-to-Ambient ^b	R_{thJA}	350	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	°C

Notes:

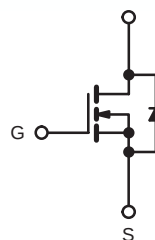
a. Pulse width limited by maximum junction temperature.

b. Surface Mounted on FR4 board.

SOT - 23



1. GATE
2. SOURCE
3. DRAIN



N-Channel MOSFET

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SPECIFICATIONS $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

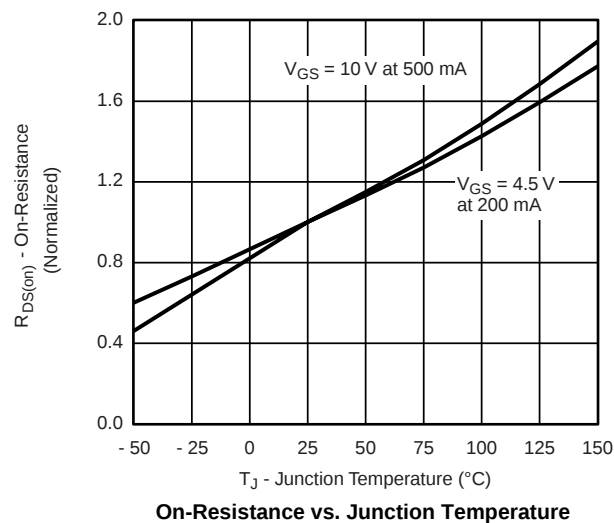
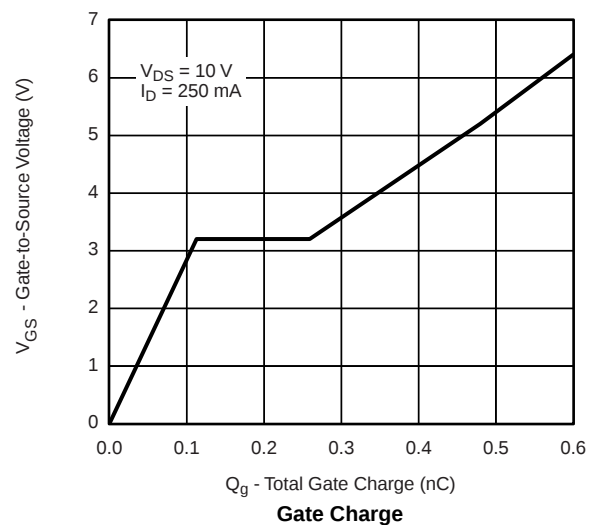
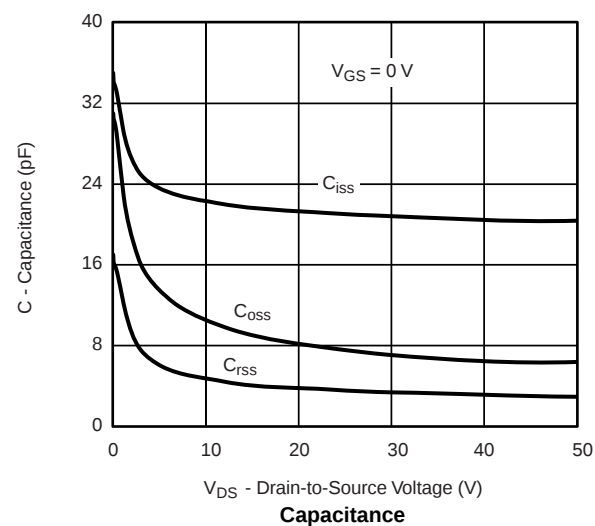
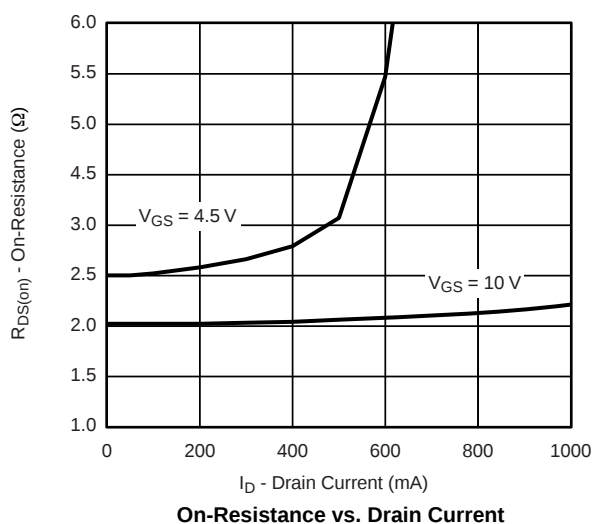
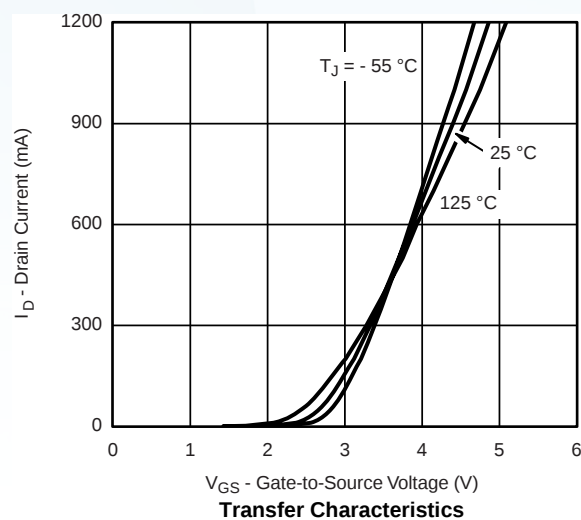
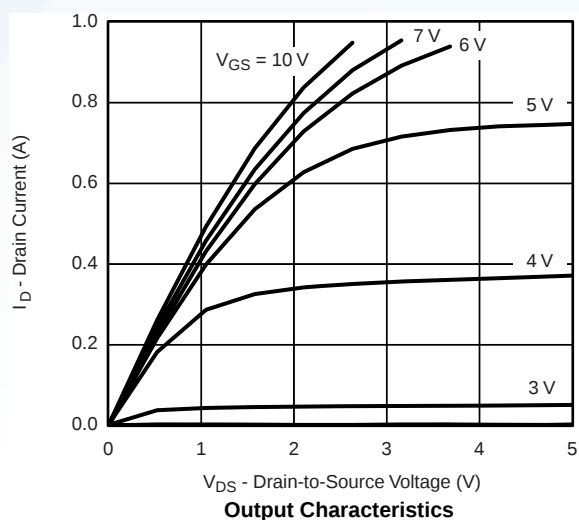
Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ. ^a	Max.	
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 10 μA	60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1		2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 10	μA
		V _{DS} = 0 V, V _{GS} = ± 15 V			1	
		V _{DS} = 0 V, V _{GS} = ± 10 V			± 150	nA
		V _{DS} = 0 V, V _{GS} = ± 10 V, T _J = 85 °C			± 1000	
		V _{DS} = 0 V, V _{GS} = ± 5 V			± 100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
		V _{DS} = 60 V, V _{GS} = 0 V , T _J = 125 °C			500	
On-State Drain Current ^a	I _{D(on)}	V _{GS} = 10 V, V _{DS} = 7.5 V	500			mA
		V _{GS} = 4.5 V, V _{DS} = 10 V	300			
Drain-Source On-Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 200 mA		2800	3300	mΩ
		V _{GS} = 4.5 V, I _D = 150 mA		3100	3800	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 100 mA	100			mS
Diode Forward Voltage	V _{SD}	I _S = 100 mA, V _{GS} = 0 V			1.3	V
Dynamic ^a						
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V I _D ≅ 150 mA		0.4	0.6	nC
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V f = 1 MHz		25		pF
Output Capacitance	C _{oss}			5		
Reverse Transfer Capacitance	C _{rss}			2.0		
Switching ^{a, b, c}						
Turn-On Time	t _{d(on)}	V _{DD} = 30 V, R _L = 150 Ω			20	ns
Turn-Off Time	t _{d(off)}	I _D ≅ 200 mA, V _{GEN} = 10 V, R _G = 10 Ω			30	

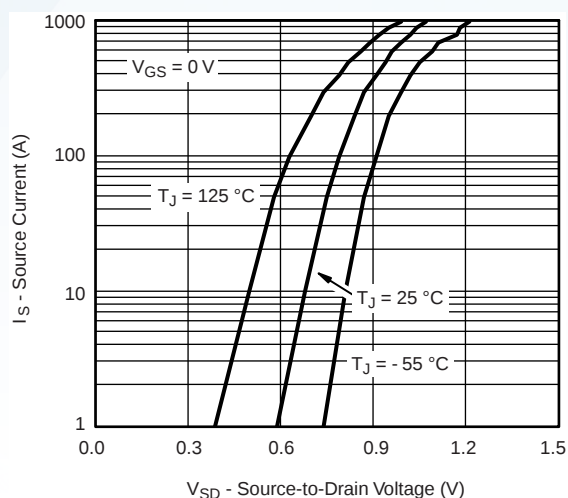
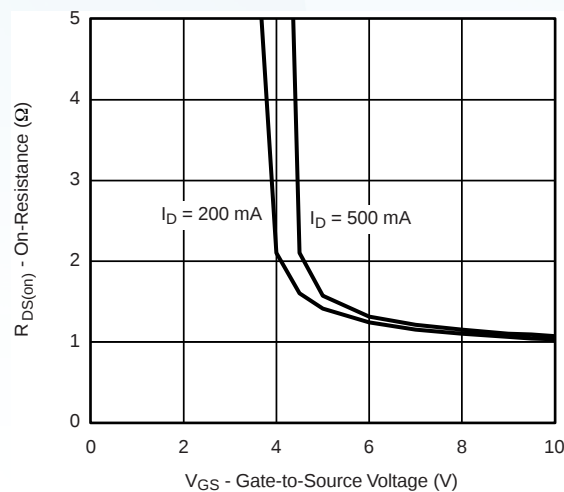
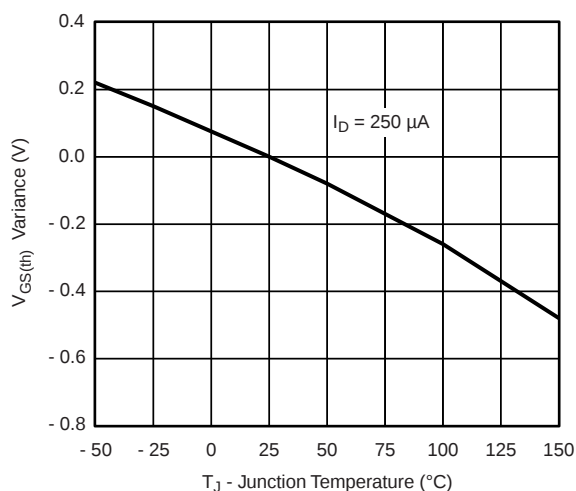
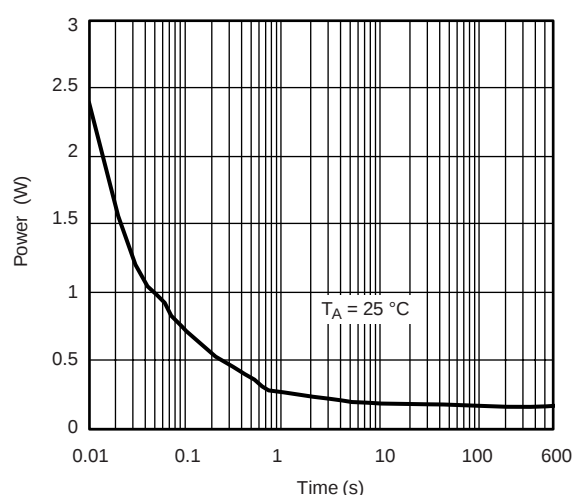
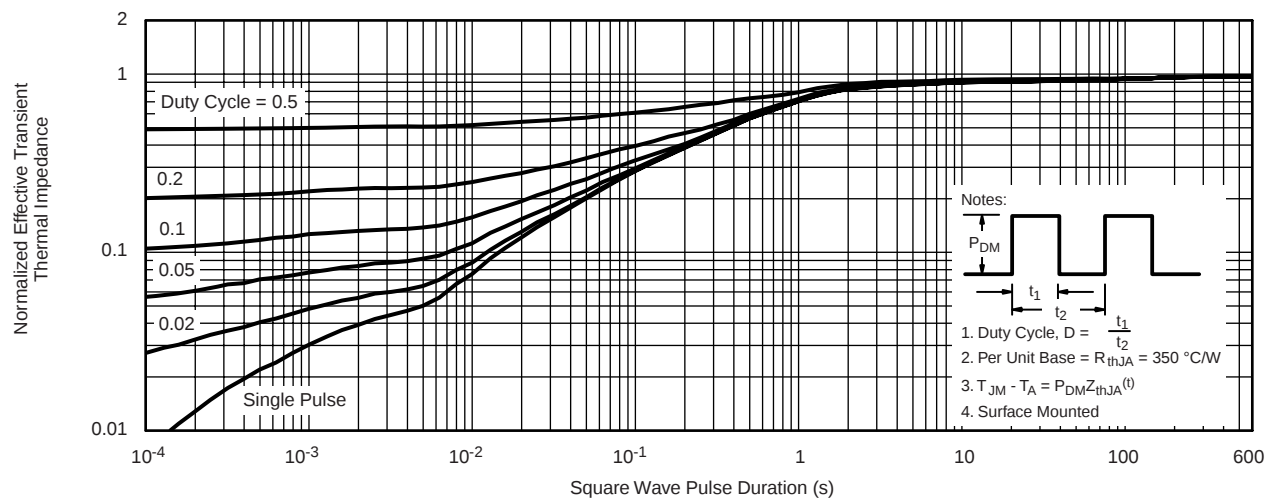
Notes:

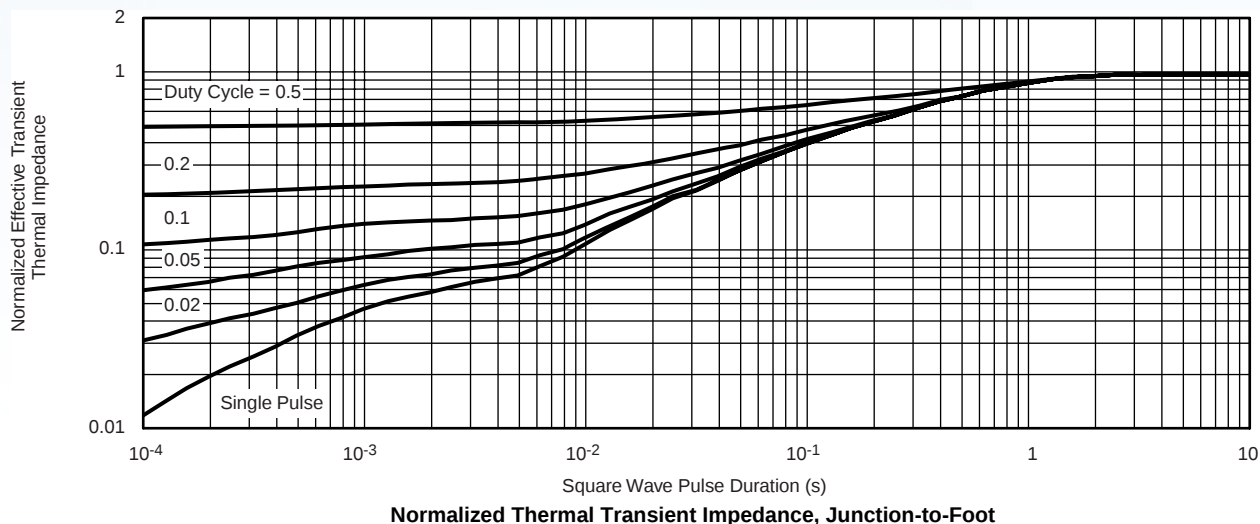
a. For DESIGN AID ONLY, not subject to production testing.

b. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.

c. Switching time is essentially independent of operating temperature.

N-Channel 60 V (D-S) MOSFET
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


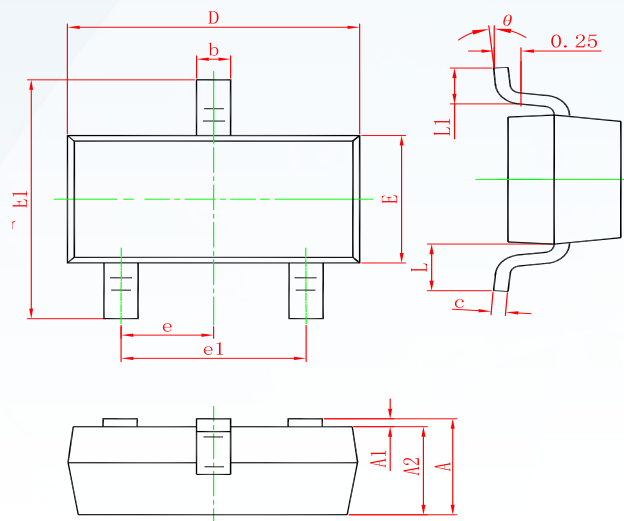
N-Channel 60 V (D-S) MOSFET
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Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-Source Voltage

Threshold Voltage Variance Over Temperature

Single Pulse Power, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Ambient

N-Channel 60 V (D-S) MOSFET
THERMAL RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Note

- The characteristics shown in the two graphs
 - Normalized Transient Thermal Impedance Junction-to-Ambient ($25\text{ }^{\circ}\text{C}$)
 - Normalized Transient Thermal Impedance Junction-to-Foot ($25\text{ }^{\circ}\text{C}$)
 are given for general guidelines only to enable the user to get a "ball park" indication of part capabilities. The data are extracted from single pulse transient thermal impedance characteristics which are developed from empirical measurements. The latter is valid for the part mounted on printed circuit board - FR4, size 1" x 1" x 0.062", double sided with 2 oz. copper, 100 % on both sides. The part capabilities can widely vary depending on actual application parameters and operating conditions.

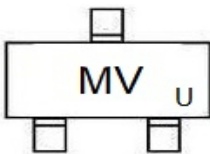
N-Channel 60 V (D-S) MOSFET

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
BS170FTA	SOT-23	3000	Tape and reel

Disclaimer

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