



UMBF170

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

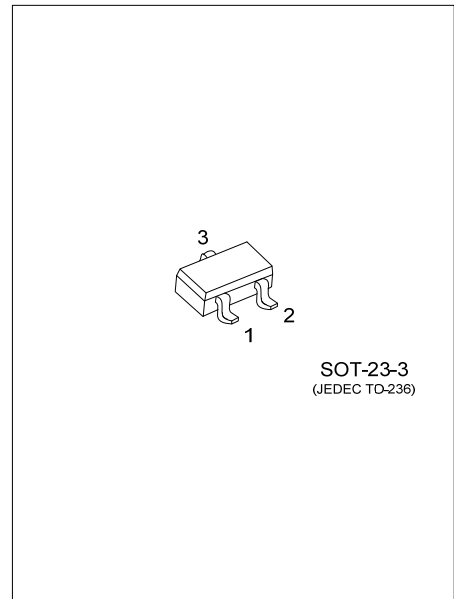
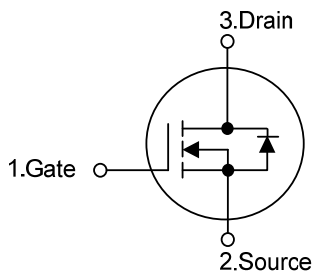
DESCRIPTION

The **UMBF170** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $R_{DS(ON)} \leq 5.0\Omega$ @ $V_{GS}=10V, I_D=300mA$
- * $R_{DS(ON)} \leq 5.3\Omega$ @ $V_{GS}=4.5V, I_D=75mA$
- * Low Reverse Transfer Capacitance ($C_{RSS} =$ typical 7.5 pF)
- * Fast Switching Capability
- * Improved dv/dt Capability, High Ruggedness

SYMBOL



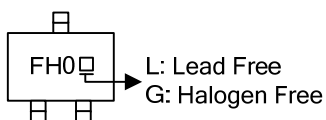
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UMBF170L-AE2-R	UMBF170G-AE2-R	SOT-23-3	G	S	D	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

<p>UMBF170G-AE2-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage ($R_G=25K\Omega$)	V_{DGS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($V_{GS}=10V$)	I_D	300	mA
Peak Drain Current ($t_P \leq 10\mu s$)	I_{DM}	1.2	A
Power Dissipation	P_D	0.83	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-65 ~ +150	$^{\circ}C$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

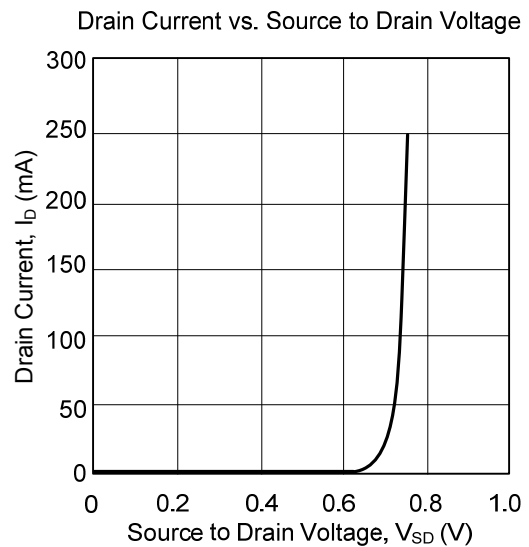
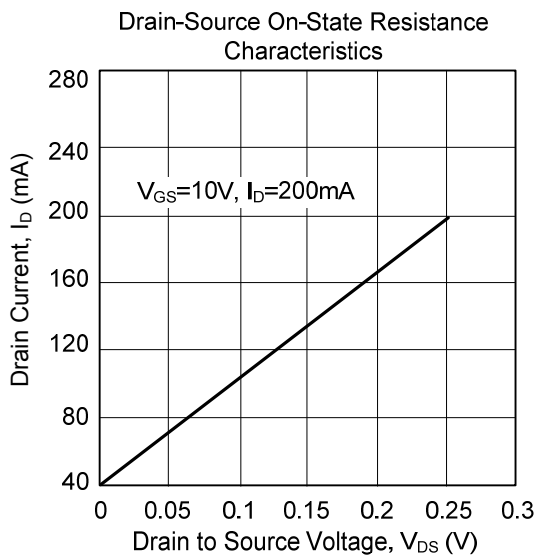
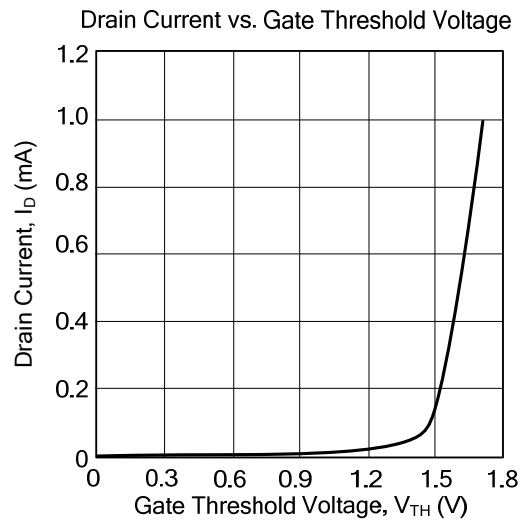
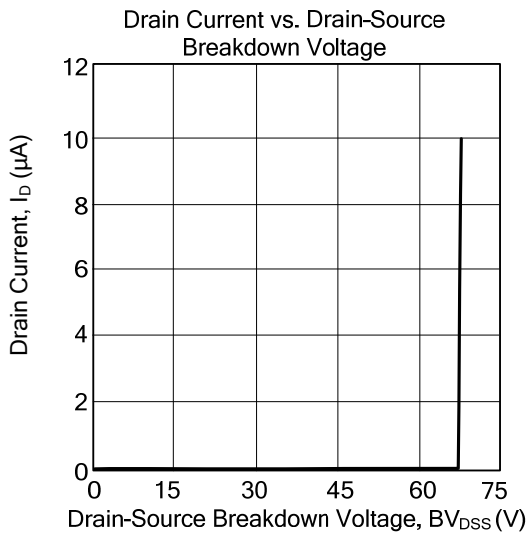
■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	350	K/W

■ ELECTRICAL CHARACTERISTICS ($T_J = 25^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=10\mu A$	60	75		V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$		0.01	1.0	μA
		$V_{DS}=25V, V_{GS}=0V$		5	500	nA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 15V, V_{DS}=0V$		10	100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=1mA$	1	2		V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=300mA$		2.8	5.0	Ω
		$V_{GS}=4.5V, I_D=75mA$		3.8	5.3	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=200mA$	100	300		mS
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		25	40	pF
Output Capacitance	C_{OSS}			18	30	pF
Reverse Transfer Capacitance	C_{RSS}			7.5	10	pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=50V, V_{GS}=10V, R_{GS}=50\Omega$		3	10	ns
Turn-OFF Delay Time	$t_{D(OFF)}$	$R_G=50\Omega, R_D=250\Omega$		12	15	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				300	mA
Peak Source (Diode Forward) Current	I_{SM}	pulsed; $t_P \leq 10\mu s$			1.2	A
Diode Forward Voltage	V_{SD}	$I_S=300mA, V_{GS}=0V$		0.85	1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$I_S=300mA, dI/dt=-100A/\mu s,$		30		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$V_{GS}=0V, V_{DS}=25V$		30		nC

TYPICAL CHARACTERISTICS



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