



MMBF170

Preliminary

Power MOSFET

0.5A, 60V N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

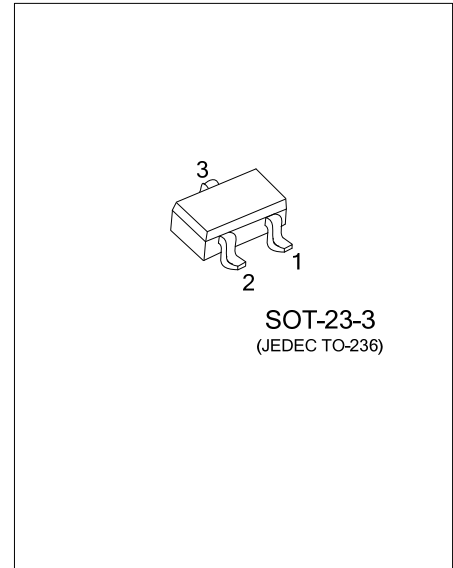
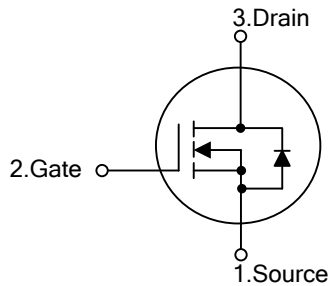
DESCRIPTION

The UTC **MMBF170** is an N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, low input capacitance, low gate threshold voltage and high switching speed.

FEATURES

- * $R_{DS(ON)} < 5m\Omega @ V_{GS}=10V, I_D=0.2A$
- * High Switching Speed
- * Low Input Capacitance (typical 22pF)

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBF170L-AE2-R	MMBF170G-AE2-R	SOT-23	S	G	D	Tape Reel

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

MMBF170L-AE2-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE2: SOT-23-3
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage	Continuous	V_{GSS}	± 20	V
	Pulsed		± 40	V
Drain-Gate Voltage $R_{GS} \leq 1.0\text{M}\Omega$		V_{DGR}	60	V
Drain Current (Note 2)	Continuous	I_D	500	mA
	Pulsed	I_{DM}	800	mA
Power Dissipation (Note 2)		P_D	225	mW
Derating above $T_A=25^\circ\text{C}$ (Note 2)			1.80	mW/ $^\circ\text{C}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

Notes: 1. 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.

2. Valid provided that terminals are kept at specified ambient temperature.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	556	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note 1)						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=100\mu\text{A}$, $V_{GS}=0\text{V}$	60	70		V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	Forward	$V_{DS}=0\text{V}$, $V_{GS}=+15\text{V}$		+10	nA
		Reverse	$V_{DS}=0\text{V}$, $V_{GS}=-15\text{V}$		-10	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	0.8	2.1	3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=200\text{mA}$			5.0	Ω
		$V_{GS}=4.5\text{V}$, $I_D=50\text{mA}$			5.3	
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=0.2\text{A}$	80			mS
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=10\text{V}$, $f=1.0\text{MHz}$		22	40	pF
Output Capacitance	C_{OSS}			11	30	pF
Reverse Transfer Capacitance	C_{RSS}			2.0	5.0	pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=25\text{V}$, $I_D=0.5\text{A}$, $V_{GS}=10\text{V}$,			10	ns
Turn-OFF Delay Time	$t_{D(OFF)}$	$R_{GEN}=50\Omega$			10	ns

Notes: 1. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

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