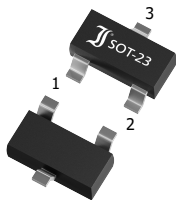
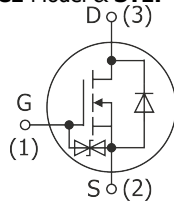


MMBT7002K
N-Channel Enhancement Mode FET
N-Kanal FET – Anreicherungstyp

I_D	= 300 mA	V_{DSS}	= 60 V
$R_{DS(on)1}$	< 3 Ω	P_{tot}	= 350 mW
T_{jmax}	= 150°C	V_{GSS1}	= \pm 2 kV

Version 2021-09-30

SOT-23
(TO-236)

SPICE Model & STEP File ¹⁾

Marking Code
 K72

HS Code 85412100

Typical Applications

Signal processing, Logic level converter,
 Drivers
 Commercial grade
 Suffix -Q: AEC-Q101 compliant ¹⁾
 Suffix -AQ: in AEC-Q101 qualification ¹⁾

Features

ESD protected Gate
 Fast switching times
 Compliant to RoHS (w/o exemp.),
 REACH, Conflict Minerals ¹⁾

Mechanical Data ¹⁾

Taped and reeled	3000 / 7"
Weight approx.	0.01 g
Case material	UL 94V-0
Solder & assembly conditions	260°C/10s
	MSL = 1

Typische Anwendungen

Signalverarbeitung, Pegel-
 wandler, Treiberstufen
 Standardausführung
 Suffix -Q: AEC-Q101 konform ¹⁾
 Suffix -AQ: in AEC-Q101 Qualifikation ¹⁾

Besonderheiten

ESD geschütztes Gate
 Schnelle Schaltzeiten



Konform zu RoHS (ohne Ausn.),
 REACH, Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

Gegurtet auf Rolle	
Gewicht ca.	
Gehäusematerial	
Löt- und Einbaubedingungen	

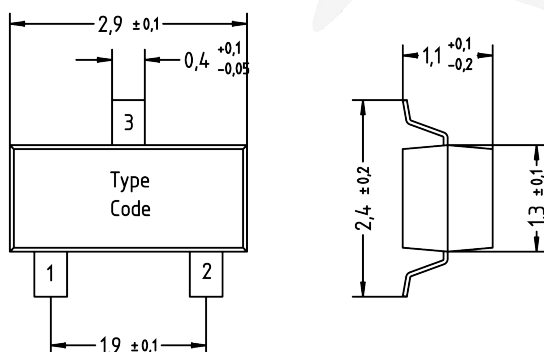
Maximum ratings ²⁾**Grenzwerte ²⁾**

		MMBT7002K/-AQ	
Drain-Source-voltage Drain-Source-Spannung		V_{DSS}	60 V
Gate-Source-voltage Gate-Source-Spannung	DC ESD	V_{GSS}	\pm 20 V \pm 2 kV
Power dissipation Verlustleistung		P_{tot}	350 mW ³⁾
Drain current Drainstrom	DC	I_D	300 mA ³⁾
Peak Drain current Drain-Spitzenstrom	$t_p = 10\mu s$ $V_{DS} = 10V$	I_{DM}	800 mA
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		T_j T_s	-55...+150°C -55...+150°C

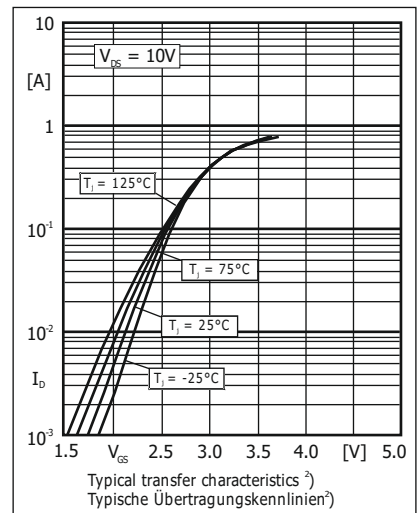
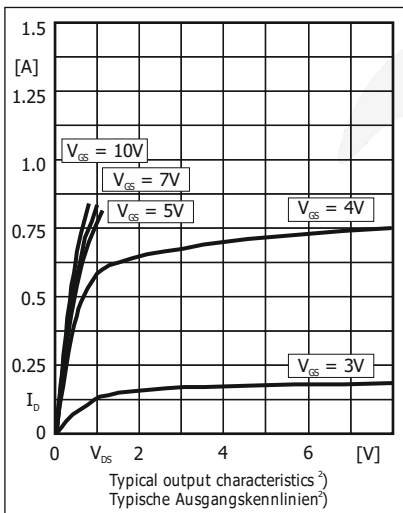
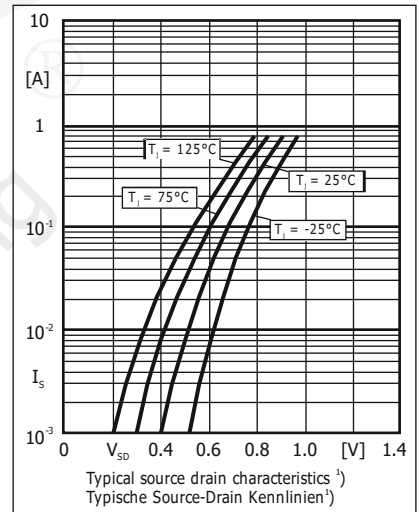
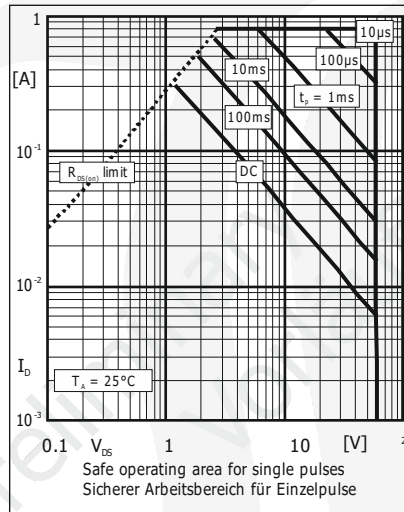
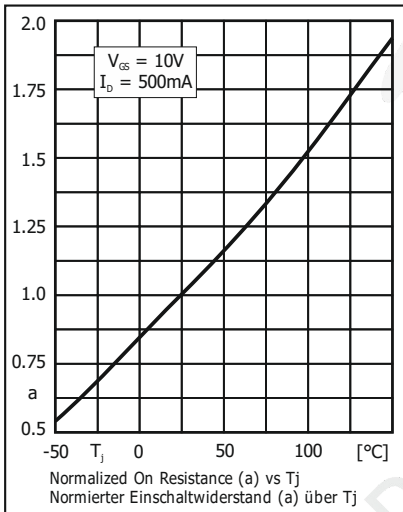
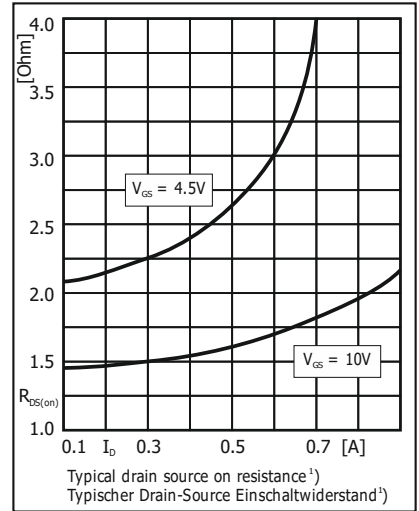
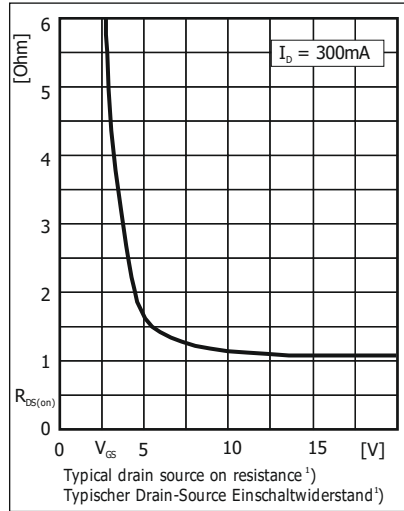
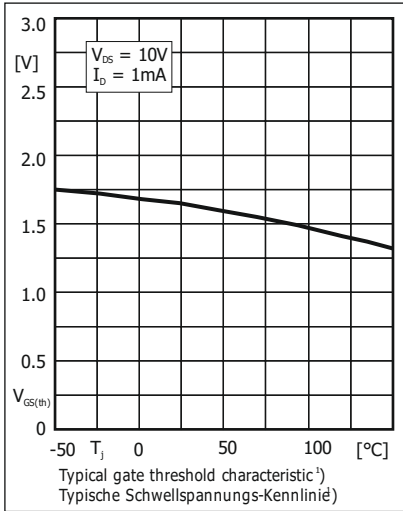
- 1 Please note the [detailed information on our website](#) or at the beginning of the data book
 Bitte beachten Sie die [detaillierten Hinweise auf unserer Internetseite](#) bzw. am Anfang des Datenbuches
- 2 $T_A = 25^\circ C$, unless otherwise specified – $T_A = 25^\circ C$, wenn nicht anders angegeben
- 3 Mounted on P.C. board with 3 mm² copper pads at each terminal
 Montage auf Leiterplatte mit 3 mm² Kupferbelag (Lötpad) an jedem Anschluss

Characteristics
Kennwerte

		$T_J = 25^\circ\text{C}$	Min.	Typ.	Max.
Drain-Source breakdown voltage – Drain-Source-Durchbruchspannung $I_D = 10 \mu\text{A}$		BV_{DSS}	60 V	–	–
Drain-Source leakage current – Drain-Source Leckstrom $V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$		I_{DSS}	–	–	1 μA
Gate-Source leakage current – Gate-Source Leckstrom $V_{GS} = 20 \text{ V}$		$\pm I_{GSS}$	–	–	10 μA
Gate-Threshold voltage – Gate-Source Schwellspannung $V_{GS} = V_{DS}, I_D = 250 \mu\text{A}$		$V_{GS(th)}$	1 V	–	2.5 V
Drain-Source on-state resistance – Drain-Source Einschaltwiderstand $V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}$ $V_{GS} = 4.5 \text{ V}, I_D = 200 \text{ mA}$		$R_{DS(on)}$	–	–	3 Ω 4 Ω
Forward Transconductance – Übertragungsteilheit $V_{DS} \geq 10 V_{DS(on)}, I_D = 200 \text{ mA}$		g_{FS}	80 mS	–	–
Input Capacitance – Eingangskapazität $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		C_{iss}	–	50 pF	–
Output Capacitance – Ausgangskapazität $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		C_{oss}	–	25 pF	–
Reverse Transfer Capacitance – Rückwirkungskapazität $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		C_{rss}	–	5 pF	–
Turn-On Time – Einschaltzeit $V_{DD} = 30 \text{ V}, R_L = 150 \Omega, I_D = 0.2 \text{ A}, V_{GS} = 10 \text{ V}, R_G = 25 \Omega$		t_{on}	–	20 ns	–
Turn-Off Delay Time – Ausschaltverzögerung $V_{DD} = 30 \text{ V}, R_L = 150 \Omega, I_D = 0.2 \text{ A}, V_{GS} = 10 \text{ V}, R_G = 25 \Omega$		t_{off}	–	20 ns	–
Typical thermal resistance junction to ambient Typischer Wärmewiderstand Sperrschicht – Umgebung		R_{thA}	357 K/W ¹⁾		

Dimensions - Maße [mm]


- 1 Mounted on P.C. board with 3 mm² copper pad per terminal – Montage auf Leiterplatte mit 3 mm² Lötpad je Anschluss
- 2 Tested with pulses $t_p = 10 \mu\text{s}$, duty cycle $\leq 1\%$ – Gemessen mit Impulsen $t_p = 10 \mu\text{s}$, Schaltverhältnis $\leq 1\%$



Disclaimer: See data book page 2 or [website](#)
Haftungsausschluss: Siehe Datenbuch Seite 2 oder [Internet](#)

1 Tested with pulses $t_p = 10 \mu s$, duty cycle $\leq 1\%$ – Gemessen mit Impulsen $t_p = 10 \mu s$, Schaltverhältnis $\leq 1\%$