

SOT-23 Plastic-Encapsulate MOSFETS

N-Channel 30-V(D-S) MOSFET

FEATURES

- Very low threshold
- High-speed switching
- No secondary breakdown
- Direct interface to C-MOS, TTL etc.

APPLICATIONS

- Power management
- DC to DC converters
- Battery powered applications
- 'Glue-logic'; interface between logic blocks and/or periphery
- General purpose switch.

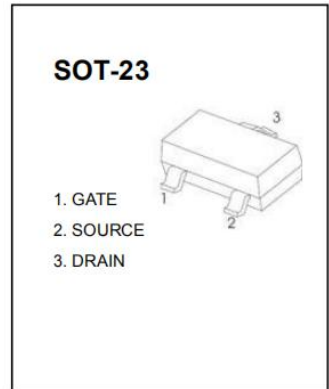
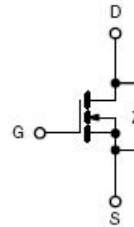
DESCRIPTION

N-channel enhancement mode MOS transistor in a SOT23 SMD package.

MARKING: 103

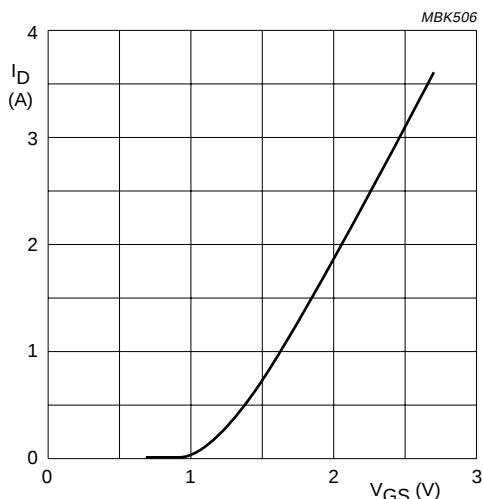
Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current ($T_s=80^{\circ}\text{C}$)	I_D	0.85	A
Continuous Source-Drain Current(Diode Conduction)	I_S	0.5	
Power Dissipation ($T_s=80^{\circ}\text{C}$)	P_D	0.5	W
Thermal Resistance from Junction to Ambient ($t \leq 5s$)	$R_{\theta JA}$	140	$^{\circ}\text{C/W}$
Operating Junction	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	



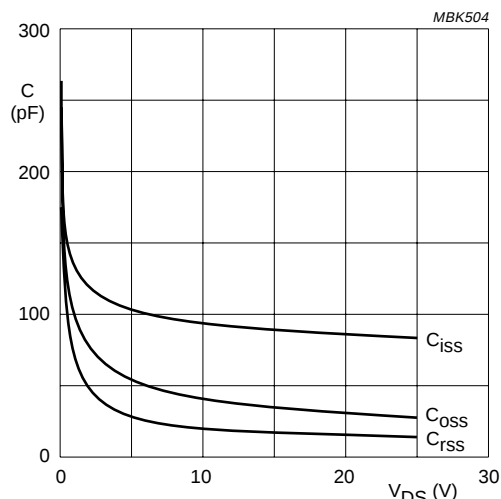
Electrical characteristics (T_a=25°C unless otherwise noted)

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{(BR)DSS}	drain-source breakdown voltage	V _{GS} = 0; I _D = 250 μA	30	–	–	V
V _{GSth}	gate-source threshold voltage	V _{GS} = V _{DS} ; I _D = 250 μA	0.4	–	1.5	V
I _{DSS}	drain-source leakage current	V _{GS} = 0; V _{DS} = 24 V	–	–	100	nA
I _{GSS}	gate leakage current	V _{GS} = ±8 V; V _{DS} = 0	–	–	±100	nA
R _{DSon}	drain-source on-state resistance	V _{GS} = 4.5 V; I _D = 0.5 A	–	–	0.4	Ω
		V _{GS} = 2.5 V; I _D = 0.5 A	–	–	0.5	Ω
		V _{GS} = 1.8 V; I _D = 0.25 A	–	–	0.6	Ω
C _{iss}	input capacitance	V _{GS} = 0; V _{DS} = 24 V; f = 1 MHz	–	83	–	pF
C _{oss}	output capacitance	V _{GS} = 0; V _{DS} = 24 V; f = 1 MHz	–	27	–	pF
C _{rss}	reverse transfer capacitance	V _{GS} = 0; V _{DS} = 24 V; f = 1 MHz	–	14	–	pF
Q _G	total gate charge	V _{GS} = 4.5 V; V _{DD} = 15 V; I _D = 0.5 A; T _{amb} = 25 °C	–	2100	–	pC
Q _{GS}	gate-source charge	V _{DD} = 15 V; I _D = 0.5 A; T _{amb} = 25 °C	–	95	–	pC
Q _{GD}	gate-drain charge	V _{DD} = 15 V; I _D = 0.5 A; T _{amb} = 25 °C	–	670	–	pC
Switching times						
t _{d(on)}	turn-on delay time	V _{GS} = 0 to 8 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	2.5	–	ns
t _f	fall time	V _{GS} = 0 to 8 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	3.5	–	ns
t _{on}	turn-on switching time	V _{GS} = 0 to 8 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	6	–	ns
t _{d(off)}	turn-off delay time	V _{GS} = 8 to 0 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	20	–	ns
t _r	rise time	V _{GS} = 8 to 0 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	7	–	ns
t _{off}	turn-off switching time	V _{GS} = 8 to 0 V; V _{DD} = 15 V; I _D = 0.5 A; R _{gen} = 6 Ω	–	27	–	ns
Source-drain diode						
V _{SD}	source-drain diode forward voltage	V _{GD} = 0; I _S = 0.5 A	–	–	1	V
t _{rr}	reverse recovery time	I _S = 0.5 A; di/dt = –100 A/μs	–	25	–	ns



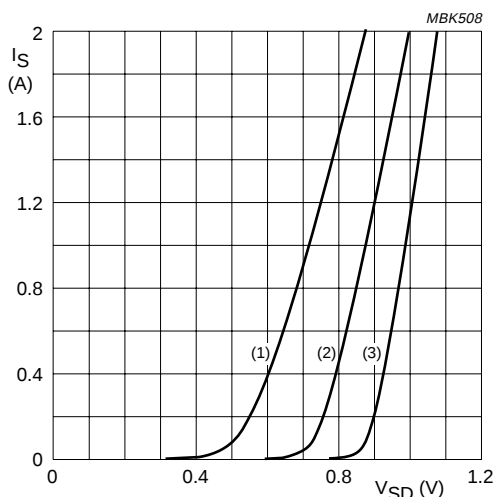
$V_{DS} = 10 \text{ V}$; $T_{amb} = 25 \text{ }^{\circ}\text{C}$; $t_p = 300 \text{ } \mu\text{s}$; $\delta = 0$.

Fig.1 Transfer characteristic; typical values.



$V_{GS} = 0$; $f = 1 \text{ MHz}$; $T_{amb} = 25 \text{ }^{\circ}\text{C}$.

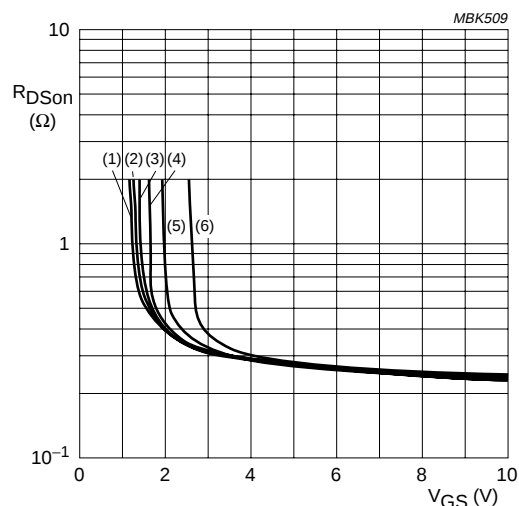
Fig.2 Capacitance as a function of drain-source voltage; typical values.



$V_{GD} = 0$.

- (1) $T_{amb} = 150 \text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = -65 \text{ }^{\circ}\text{C}$.

Fig.3 Source current as a function of source-drain diode forward voltage; typical values.



$T_{amb} = 25 \text{ }^{\circ}\text{C}$; $t_p = 300 \text{ } \mu\text{s}$; $\delta = 0$.

- (1) $I_D = 0.1 \text{ A}$.
- (2) $I_D = 0.22 \text{ A}$.
- (3) $I_D = 0.45 \text{ A}$.
- (4) $I_D = 0.9 \text{ A}$.
- (5) $I_D = 1.8 \text{ A}$.
- (6) $I_D = 3.6 \text{ A}$.

Fig.4 Drain-source on-state resistance as a function of gate-source voltage; typical values.