2.5V Drive Nch+Pch MOSFET

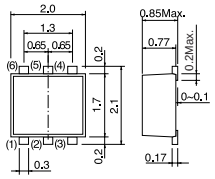
US6M2

●Structure
Silicon N-channel MOSFET /
Silicon P-channel MOSFET

●Features
1) Nch MOSFET and Pch MOSFET are put in TUMT6 package.
2) High-speed switching, low On-resistance.
3) Low voltage drive (2.5V drive).
4) Built-in G-S Protection Diode.

●Dimensions (Unit : mm)

TUMT6



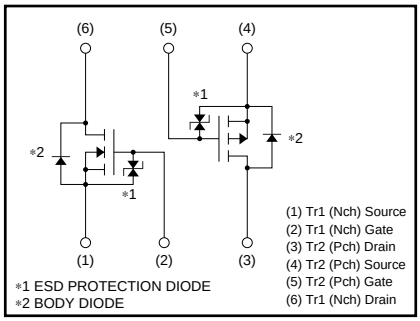
Abbreviated symbol : M02

●Applications
Switching

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
US6M2		○

●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits		Unit
			Tr1 : Nchannel	Tr2 : Pchannel	
Drain-source voltage		V_{DSS}	30	−20	V
Gate-source voltage		V_{GSS}	12	−12	V
Drain current	Continuous	I_D	±1.5	±1	A
	Pulsed	I_{DP} ∗1	±6	±4	A
Source current (Body diode)	Continuous	I_S	0.6	−0.4	A
	Pulsed	I_{SP} ∗1	6	−4	A
Total power dissipation		P_D ∗2	1.0		W / TOTAL
			0.7		W / ELEMENT
Channel temperature		Tch	150		°C
Storage temperature		Tstg	−55 to +150		°C

∗1 Pw≤10µs, Duty cycle≤1%
∗2 Mounted on a ceramic board.

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a) ∗	125	°C/W / TOTAL
		179	°C/W / ELEMENT

∗ Mounted on a ceramic board

N-ch

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	10	μA	V_{GS}=12V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	30	–	–	V	I_D= 1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	1	μA	V_{DS}= 30V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	0.5	–	1.5	V	V_{DS}= 10V, I_D= 1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	–	170	240	mΩ	I_D= 1.5A, V_{GS}= 4.5V
		–	180	250	mΩ	I_D= 1.5A, V_{GS}= 4V
		–	240	340	mΩ	I_D= 1.5A, V_{GS}= 2.5V
Forward transfer admittance	$\|Y_{fs}\|$ *	1.5	–	–	S	V_{DS}= 10V, I_D= 1.5A
Input capacitance	C_{iss}	–	80	–	pF	V_{DS}= 10V
Output capacitance	C_{oss}	–	13	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	12	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	7	–	ns	V_{DD}≒ 15V
Rise time	t_r *	–	9	–	ns	I_D= 0.75A
Turn-off delay time	$t_{d\ (off)}$ *	–	15	–	ns	V_{GS}= 4.5V R_L= 20Ω
Fall time	t_f *	–	6	–	ns	R_G=10Ω
Total gate charge	Q_g *	–	1.6	2.2	nC	V_{DD}≒ 15V, V_{GS}= 4.5V
Gate-source charge	Q_{gs} *	–	0.5	–	nC	I_D= 1.5A
Gate-drain charge	Q_{gd} *	–	0.3	–	nC	R_L= 10Ω, R_G= 10Ω

*Pulsed

●**Body diode characteristics** (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	–	–	1.2	V	I_S= 0.6A, V_{GS}=0V

P-ch

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	10	μA	V_{GS}= –12V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	–20	–	–	V	I_D= –1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	–1	μA	V_{DS}= –20V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	–0.7	–	–2.0	V	V_{DS}= –10V, I_D= –1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	–	280	390	mΩ	I_D= –1A, V_{GS}= –4.5V
		–	310	430	mΩ	I_D= –1A, V_{GS}= –4V
		–	570	800	mΩ	I_D= –0.5A, V_{GS}= –2.5V
Forward transfer admittance	$\|Y_{fs}\|$ *	0.7	–	–	S	V_{DS}= –10V, I_D= –0.5A
Input capacitance	C_{iss}	–	150	–	pF	V_{DS}= –10V
Output capacitance	C_{oss}	–	20	–	pF	V_{GS}= 0V
Reverse transfer capacitance	C_{rss}	–	20	–	pF	f=1MHz
Turn-on delay time	$t_{d\ (on)}$ *	–	9	–	ns	V_{DD}≒ –15V
Rise time	t_r *	–	8	–	ns	I_D= –0.5A
Turn-off delay time	$t_{d\ (off)}$ *	–	25	–	ns	V_{GS}= –4.5V
Fall time	t_f *	–	10	–	ns	R_L= 30Ω R_G= 10Ω
Total gate charge	Q_g *	–	2.1	–	nC	V_{DD}≒ –15V, V_{GS}= –4.5V
Gate-source charge	Q_{gs} *	–	0.5	–	nC	I_D= –1A
Gate-drain charge	Q_{gd} *	–	0.5	–	nC	R_L= 15Ω, R_G= 10Ω

*Pulsed

●**Body diode characteristics** (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	–	–	–1.2	V	I_S= –0.4A, V_{GS}=0V

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