

4V Drive Nch + Nch MOSFET

MP6K31

Structure

Silicon N-channel MOSFET

Features

- 1) Built-in G-S Protection Diode.
- 2) Small Surface Mount Package (MPT6).
- 3) Low voltage drive. (4V)

MPT6 ((Dual)

Dimensions (Unit : mm)

Application

Switching

Packaging specifications

	<u> </u>	
Туре	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	1000
MP6K31		0

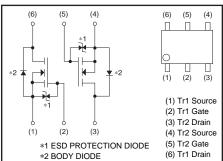
● Absolute maximum ratings (Ta = 25°C)

<It is the same ratings for Tr1 and Tr2.>

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Parameter		Symbol Limits		Unit	
Drain-source voltage		V_{DSS}	60	V	
Gate-source voltage		V_{GSS}	±20	V	
Drain current	Continuous	I _D	<u>+2</u>	А	
	Pulsed	I _{DP} *1	±8	Α	
Source current (Body Diode)	Continuous	l _s	1.2	А	
	Pulsed	I _{sp} *1	8	Α	
Power dissipation		P _D *2	2.0	W / TOTAL	
		ט י	1.4	W / ELEMENT	
Channel temperature		Tch	150	°C	
Range of storage temperature		Tstg -55 to +150		°C	

^{*1} Pw≤10µs, Duty cycle≤1%

• Inner circuit



^{*2} Mounted on a ceramic board.

● Electrical characteristics (Ta = 25°C)

<It is the same characteristics for Tr1 and Tr2.>

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	1	-	±10	μA	$V_{GS}=\pm20V, V_{DS}=0V$
Drain-source breakdown voltage	V _{(BR)DSS}	60	-	1	٧	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	1	-	1	μA	V_{DS} =60V, V_{GS} =0V
Gate threshold voltage	V _{GS (th)}	1.0	-	2.5	>	$V_{DS}=10V$, $I_{D}=1mA$
Static drain-source on-state resistance	*		210	290	mΩ	I _D =2A, V _{GS} =10V
	R _{DS (on)}	-	240	330		I _D =2A, V _{GS} =4.5V
		-	255	350		I _D =2A, V _{GS} =4.0V
Forward transfer admittance	I Y _{fs} ľ*	1.4	-	-	S	I _D =2A, V _{DS} =10V
Input capacitance	C _{iss}	-	110	-	pF	V _{DS} =10V
Output capacitance	C _{oss}	-	28	-	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	-	12	-	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	1	6	-	ns	I _D =1A, V _{DD} ≒30V
Rise time	t _r *	1	10	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *	-	20	-	ns	$R_L=30\Omega$
Fall time	t _f *	ı	9	-	ns	$R_G=10\Omega$
Total gate charge	Q _g *	-	2.0	-	nC	I _D =2A, V _{DD} ≒30V
Gate-source charge	Q _{gs} *	-	0.8	-	nC	V _{GS} =5V
Gate-drain charge	Q _{gd} *	-	0.4	-	nC	

^{*}Pulsed

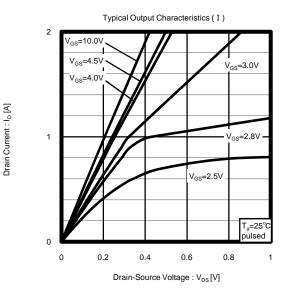
●Body diode characteristics (Source-Drain) (Ta = 25°C)

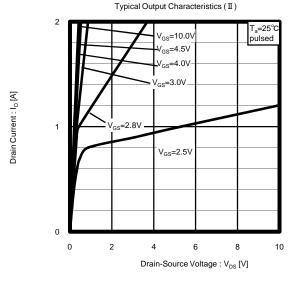
<It is the same characteristics for Tr1 and Tr2.>

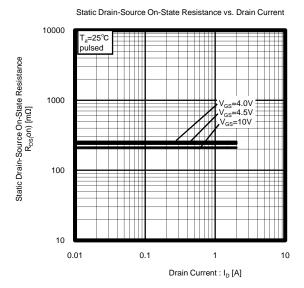
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward Voltage	V _{SD} *	-	-	1.2	V	I _s =1.2A, V _{GS} =0V

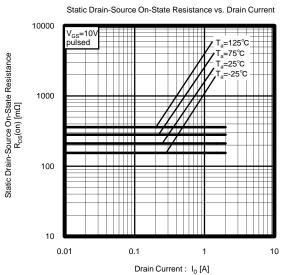
^{*}Pulsed

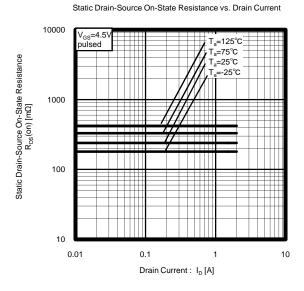
● Electrical characteristic curves (Ta = 25°C)

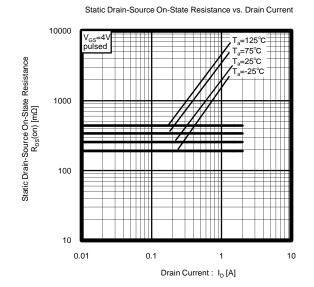


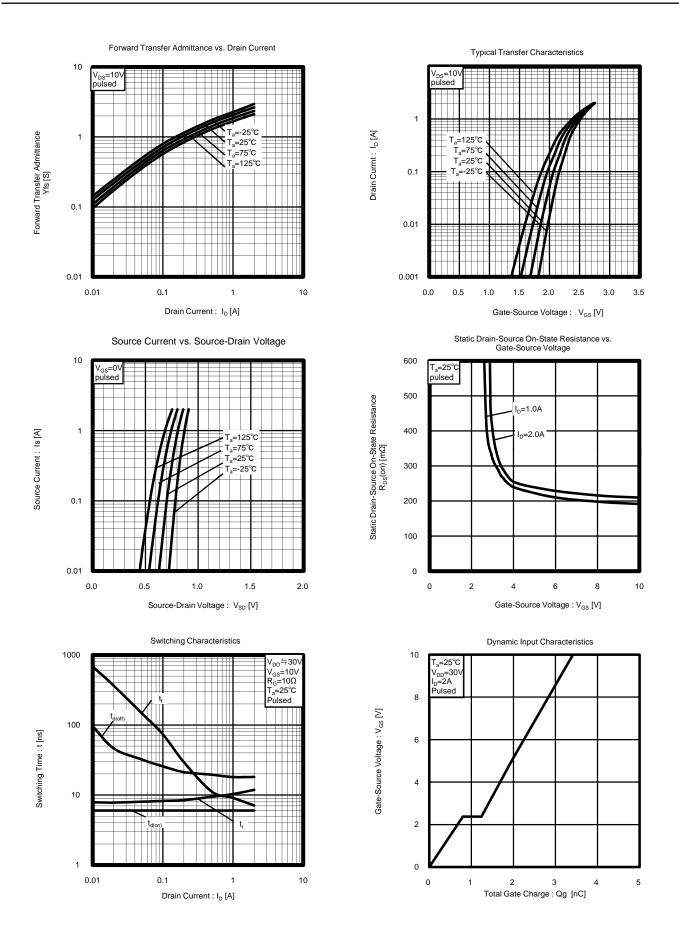


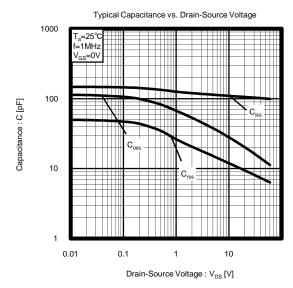


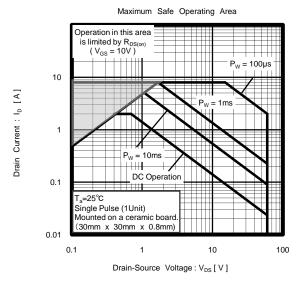




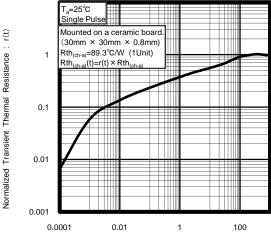












Pulse width : Pw (s)

Measurement circuits

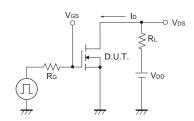


Fig.1-1 Switching time measurement circuit

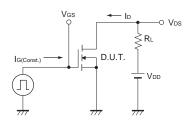


Fig.2-1 Gate charge measurement circuit

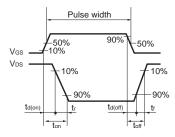


Fig.1-2 Switching waveforms

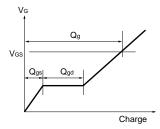


Fig.2-2 Gate Charge Waveform

Notes

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