



Micro Commercial Components

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MCQ4503

Features

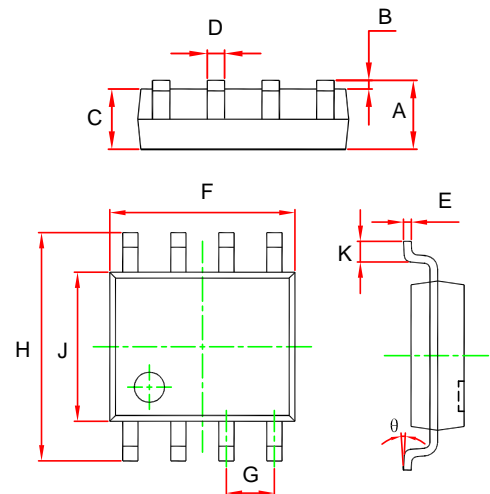
- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/Rohs Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking: Q4503

N and P-Channel Enhancement Mode Field Effect Transistor

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

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current ^a	I_D	6.9	-6.3	A
$T_a=25^{\circ}\text{C}$ $T_a=70^{\circ}\text{C}$		5.5	-5	
Pulsed Drain Current ^b	I_{DM}	20	-20	A
Power Dissipation	P_D	1.4		W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89		$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	150		$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150		

SOP-8

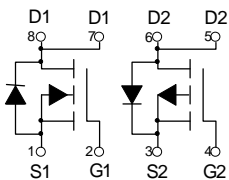


DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K	0.016	0.050	0.400	1.270	
θ	0°	8°	0°	8°	

Notes :

- These tests are performed with infinite heat sink.
- Pulse width by Max.junction temperature.

Equivalent Circuit



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

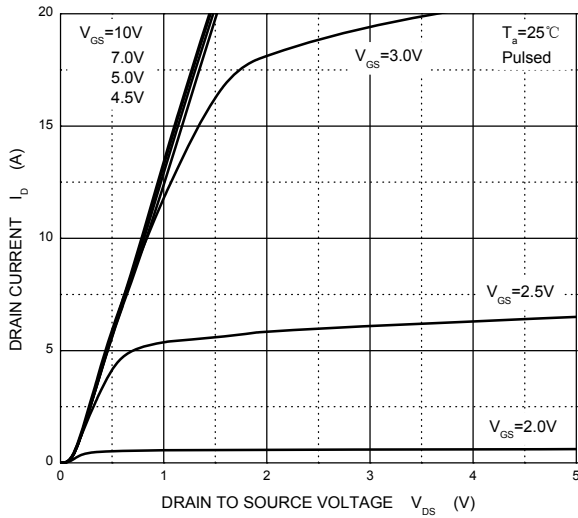
Parameter	Symbol	Test Condition	Min	Typ	Max	Units	
Static							
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0, I_D=250\mu\text{A}$	N-Ch	30		V	
		$V_{GS}=0, I_D=-250\mu\text{A}$	P-Ch	-30			
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	N-Ch	1	1.5	3	V
		$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	P-Ch	-1	-1.7	-3	
Gate-body leakage	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$	N-Ch			± 100	nA
			P-Ch				
Zero gate voltage drain current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$	N-Ch			1	μA
		$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$	P-Ch			-1	
Drain-source on-resistance ^c	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=6\text{A}$	N-Ch		10	28	m Ω
		$V_{GS}=-10\text{V}, I_D=-6\text{A}$	P-Ch		16	36	
		$V_{GS}=4.5\text{V}, I_D=4\text{A}$	N-Ch		14	42	
		$V_{GS}=-4.5\text{V}, I_D=-4\text{A}$	P-Ch		25	55	
Forward transconductance	g_{fs}	$V_{DS}=10\text{V}, I_D=6\text{A}$	N-Ch	4			S
		$V_{DS}=-10\text{V}, I_D=-6\text{A}$	P-Ch				
Diode forward voltage ^c	V_{SD}	$I_S=1.7\text{A}, V_{GS}=0\text{V}$	N-Ch			1.2	V
		$I_S=-1.7\text{A}, V_{GS}=0\text{V}$	P-Ch			-1.2	
Dynamic							
Total gate charge ^c	Q_g	N-Channel	N-Ch			13.5	nC
			P-Ch			20	
Gate-source charge ^d	Q_{gs}	$V_{DS}=24\text{V}, V_{GS}=4.5\text{V}, I_D=6\text{A}$ P-Channel	N-Ch		1.4		nC
			P-Ch		2		
Gate-drain charge ^d	Q_{gd}	$V_{DS}=-24\text{V}, V_{GS}=-4.5\text{V}, I_D=-6\text{A}$	N-Ch		4.7		nC
			P-Ch		7		
Turn-on delay time ^c	$t_{d(on)}$	N-Channel	N-Ch		5		ns
			P-Ch		8		
Rise time ^d	t_r	$V_{DS}=20\text{V}, R_D=20\Omega, I_D=1\text{A},$ $V_{GS}=10\text{V}, R_G=3.3\Omega$	N-Ch		8		ns
			P-Ch		7		
Turn-off delay time ^d	$t_{d(off)}$	P-Channel $V_{DS}=-15\text{V}, R_D=15\Omega, I_D=-1\text{A},$ $V_{GS}=-10\text{V}, R_G=3.3\Omega$	N-Ch		18.5		ns
			P-Ch		34		
Fall time ^d	t_f		N-Ch		9		ns
			P-Ch		26		
Input Capacitance ^d	C_{iss}	N-Channel	N-Ch			770	pF
			P-Ch			1380	
Output Capacitance ^d	C_{oss}	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$ P-Channel	N-Ch		80		pF
			P-Ch		150		
Reverse Transfer Capacitance ^d	C_{rss}	$V_{DS}=-25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	N-Ch		75		pF
			P-Ch		140		

Notes :

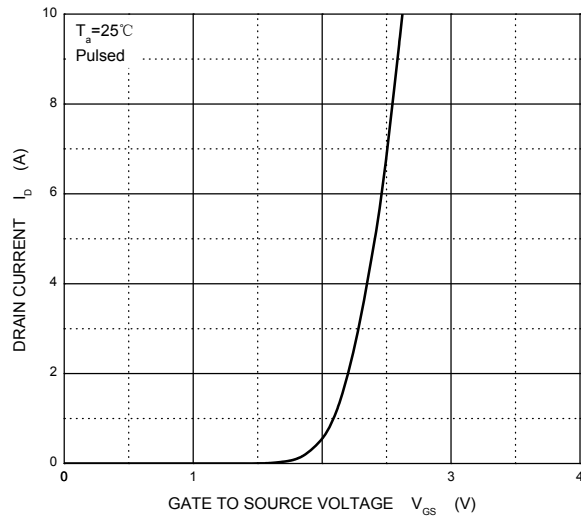
- c. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- d. Guaranteed by design, not subject to production testing.

Typical Characteristics

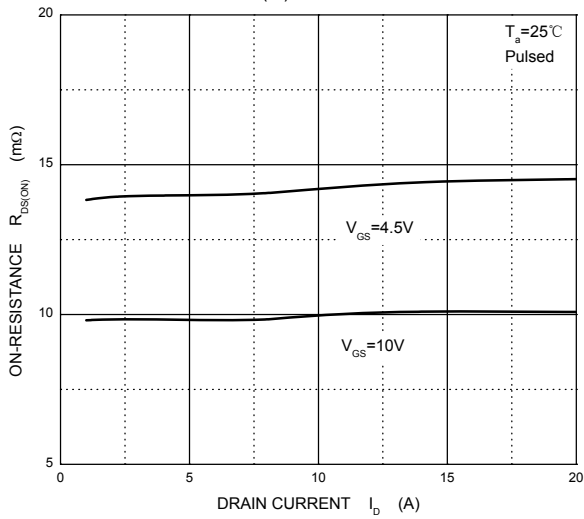
Output Characteristics



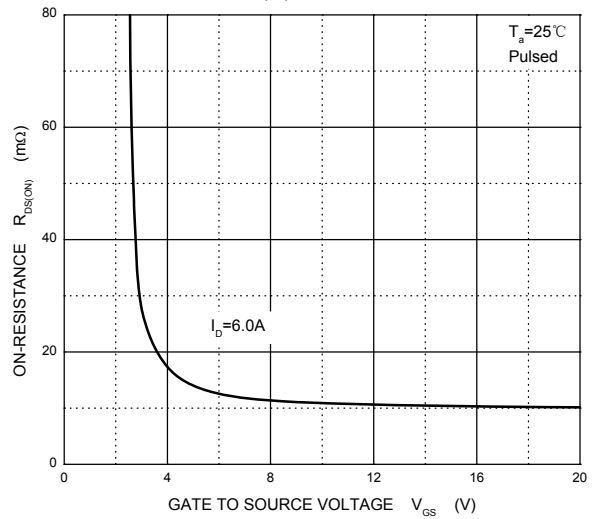
Transfer Characteristics



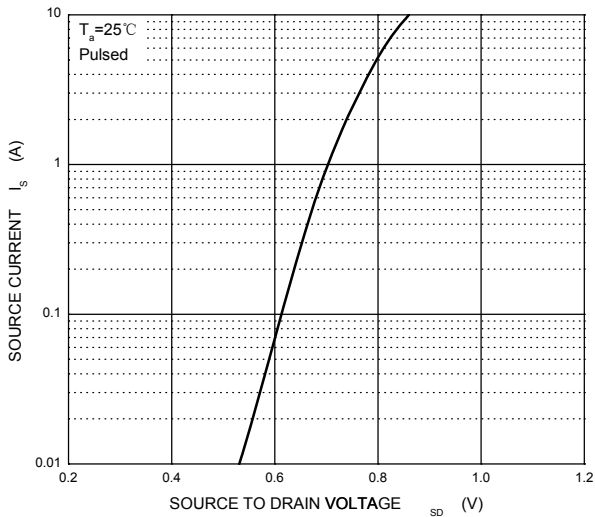
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

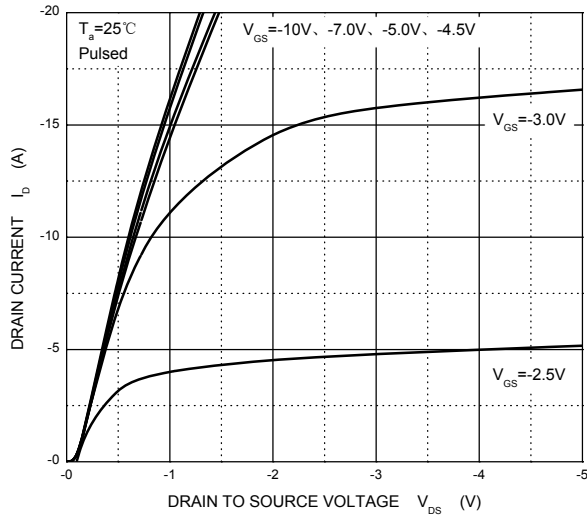


I_S — V_{SD}

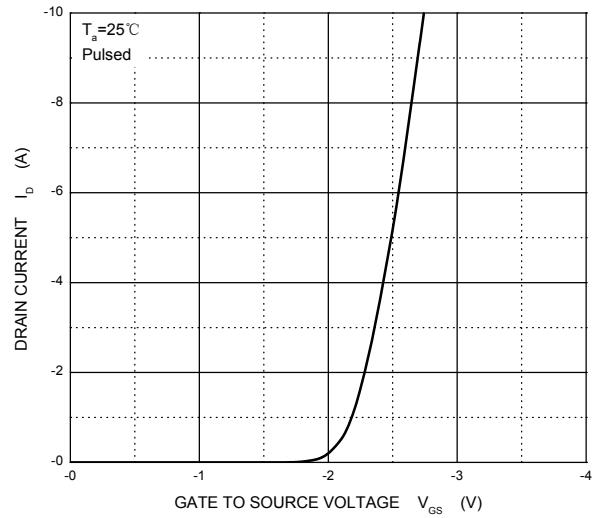


Typical Characteristics

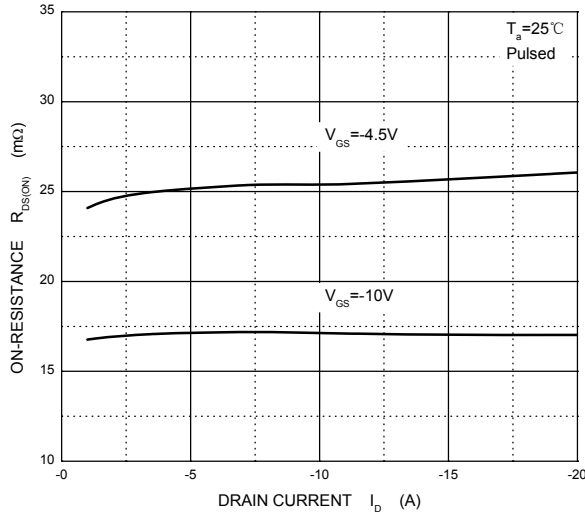
Output Characteristics



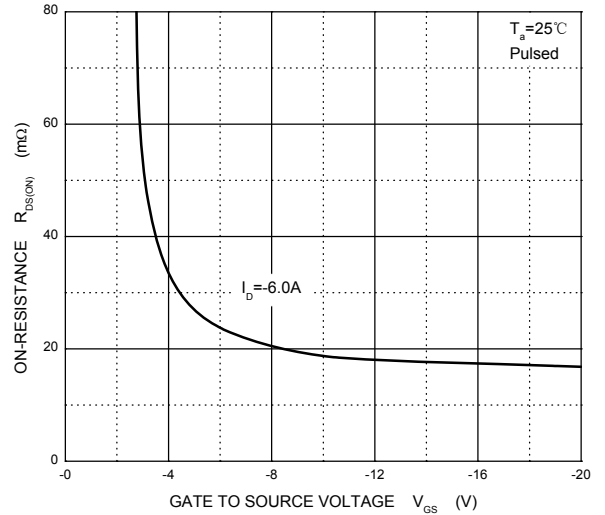
Transfer Characteristics



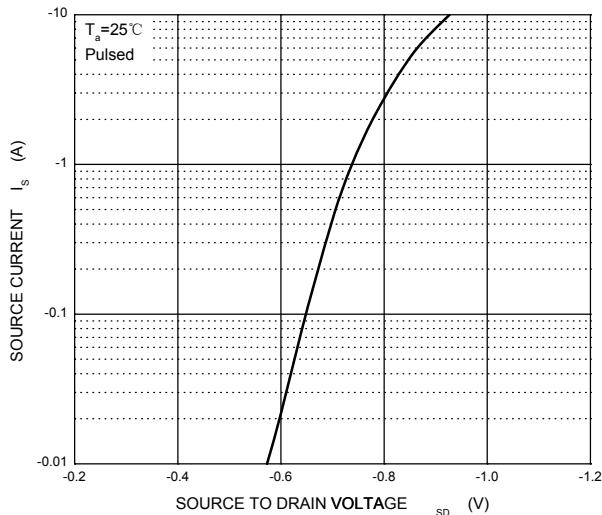
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}





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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:4Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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