Micro Commercial Components

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MCQ4503

N and P-Channel Enhancement Mode Field Effect Transistor

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

Maximum ratings (T_a=25℃ unless otherwise noted)

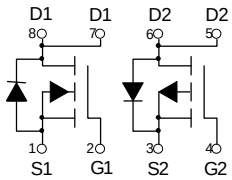
Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current [a] T_a=25℃ T_a=70℃	I_D	6.9 5.5	-6.3 -5	A
Pulsed Drain Current [b]	I_{DM}	20	-20	A
Power Dissipation	P_D	1.4		W
Thermal Resistance from Junction to Ambient	$R_{\theta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

Notes :

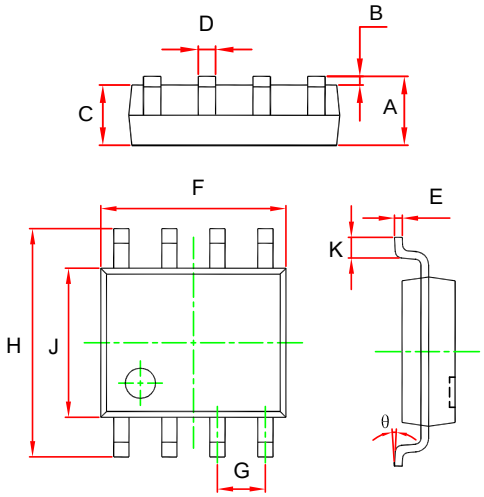
a. These tests are performed with infinite heat sink.

b.Pulse width by Max.junction temperature.

Equivalent Circuit



SOP-8



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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°	

Electrical characteristics (T_a=25℃ unless otherwise noted)

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

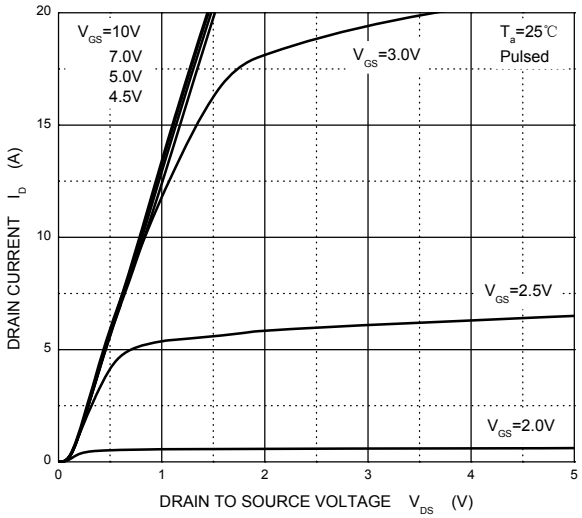
Notes :

c. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

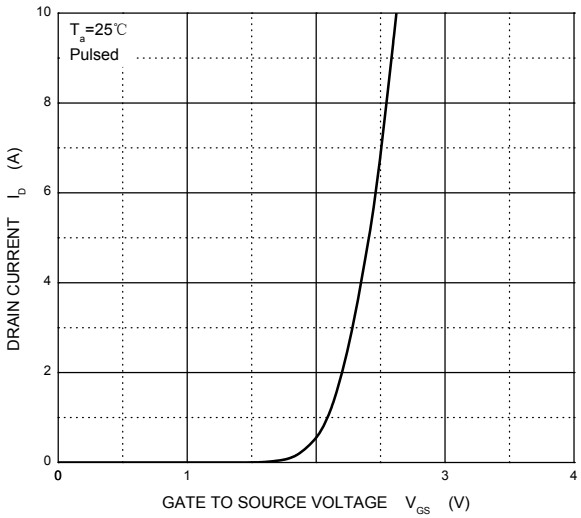
d. Guaranteed by design, not subject to production testing.

Typical Characteristics

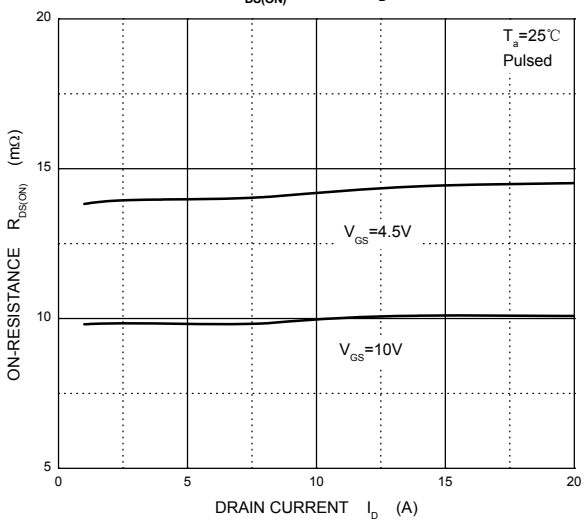
Output Characteristics



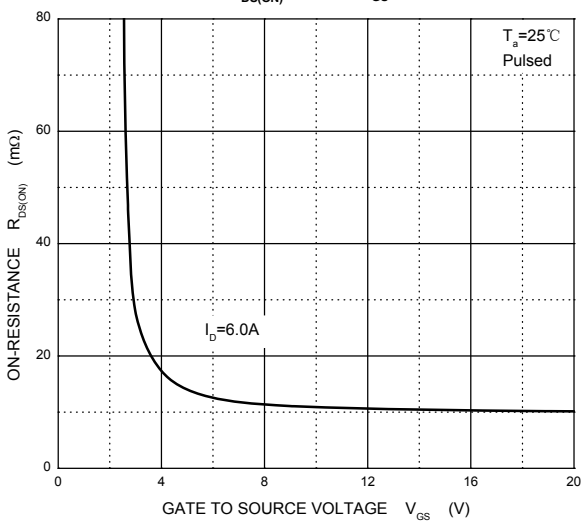
Transfer Characteristics



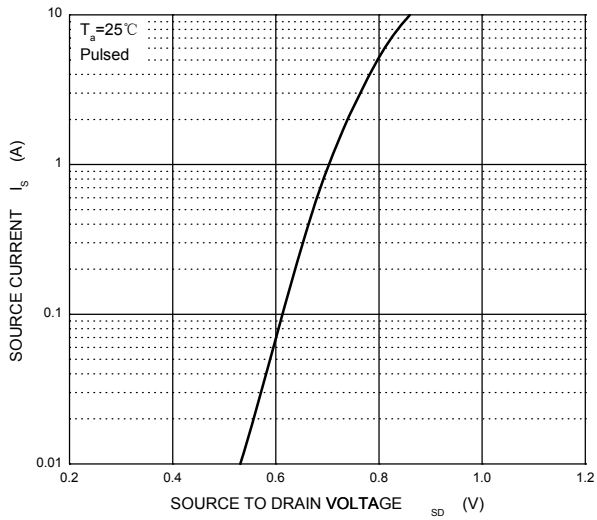
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

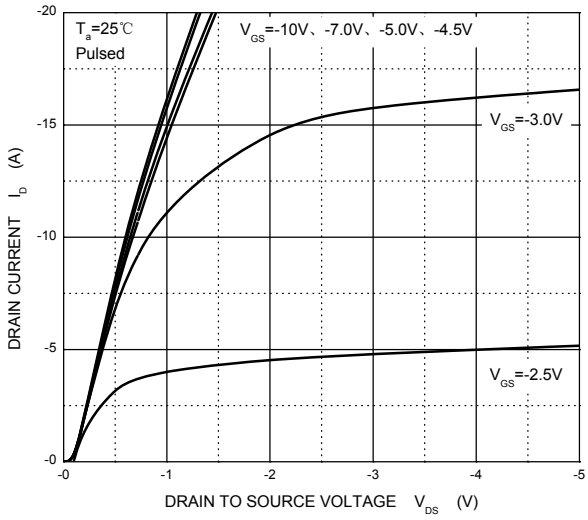


I_S — V_{SD}

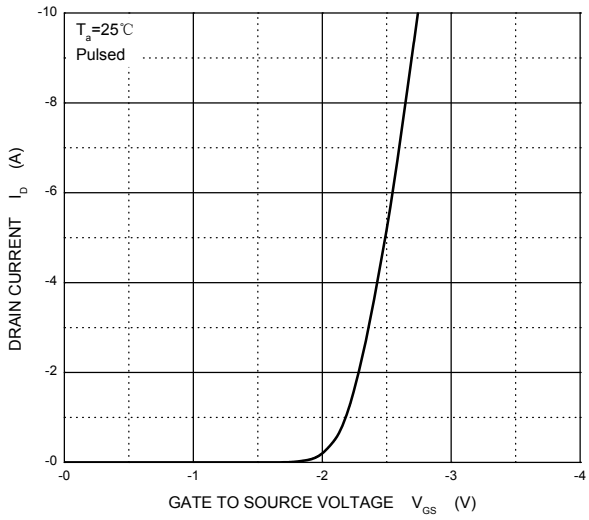


Typical Characteristics

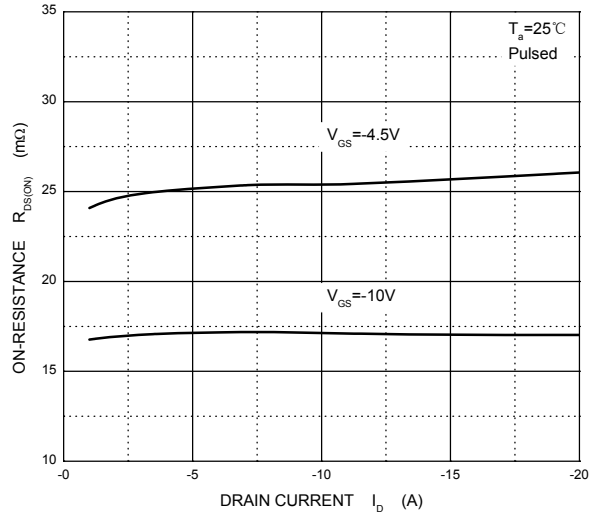
Output Characteristics



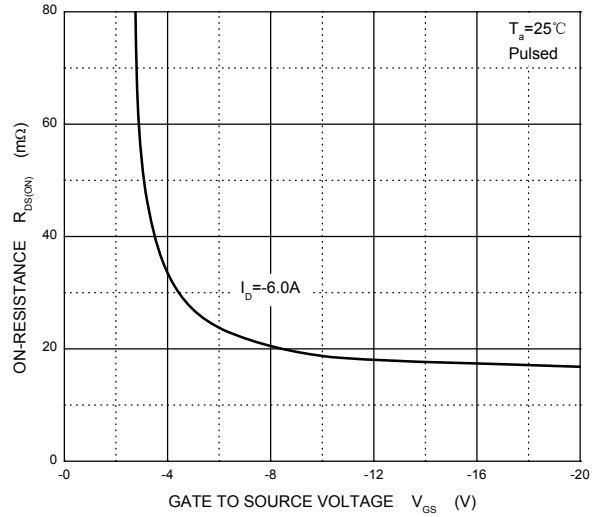
Transfer Characteristics



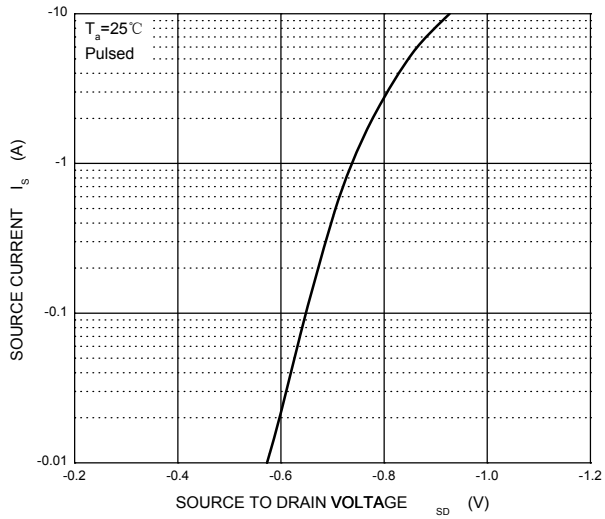
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — 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