Micro Commercial Components

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MCMNP517

N and P-Channel Enhancement Mode Field Effect Transistor

Features

- Halogen free available upon request by adding suffix "-HF"
- Super High Density Cell Design for Extremely Low $R_{DS(ON)}$
- 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:517

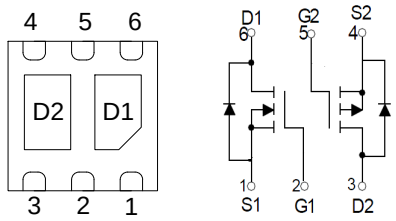
Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	12	-12	V
Gate-Source Voltage	V_{GS}	±12	±12	V
Continuous Drain Current (NOTE1)	I_D	6.0	-4.1	A
Pulsed Drain Current	I_{DM}	24	-16.4	A
Continous Source-Drain Diode Current	I_S	6	-4.1	A
Thermal Resistance from Junction to Ambient (NOTE1)	$R_{\theta JA}$	167		℃/W
Operating Junction Temperature	T_J	150		℃
Storage Temperature	T_{STG}	-55 ~+150		

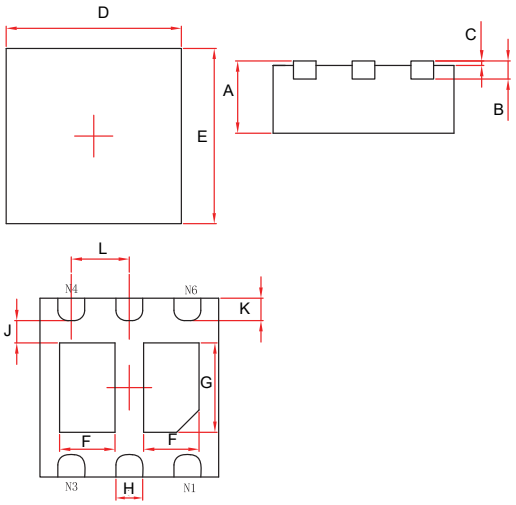
Notes :

1.Surface mounted on FR4 board using the minimum recommended pad size.

Equivalent Circuit



DFN2020-6U



Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	.035	0.700	0.900	
B	0.008REF.		0.203REF.		
C	0000	0.002	0.000	0.050	
D	0.076	0.082	1.924	2.076	
E	0.076	0.082	1.924	2.076	
F	0.020	0.028	0.520	0.720	
G	0.035	0.043	0.900	1.100	
H	0.010	0.014	0.250	0.350	
J	0.008	---	0.200	---	
K	0.007	0.013	0.174	0.326	
L	0.026TYP.		0.650TYP.		

MOSFET ELECTRICAL CHARACTERISTICS

N-ch MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	12			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =16V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 2)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5		1	V
Drain-source on-resistance(note 2)	$R_{DS(on)}$	V_{GS} =10V, I_D =6A			24	mΩ
		V_{GS} =4.5V, I_D =5A			27	mΩ
		V_{GS} =2.5V, I_D =4A			42	mΩ
		V_{GS} =1.8V, I_D =2A			74	mΩ
Forward tranconductance(note 2)	g_{FS}	V_{DS} =5V, I_D =3.8A	4			S
Diode forward voltage	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		630		pF
Output Capacitance	C_{oss}			164		pF
Reverse Transfer Capacitance	C_{rss}			137		pF
SWITCHING CHARACTERISTICS (note 3,4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=5V,V_{DS}=10V, R_{GEN}=6Ω， R_L=1.7Ω		5.5		ns
Turn-on rise time	t_r			14		ns
Turn-off delay time	$t_{d(off)}$			29		ns
Turn-off fall time	t_f			10.2		ns
Total Gate Charge	Q_g	V_{DS}=10V,I_D=6A, V_{GS}=10V		12		nC
Gate-Source Charge	Q_{gs}			1		nC
Gate-Drain Charge	Q_{gd}			2		nC

P-ch MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-12			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-8V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±8V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 2)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5		-0.9	V
Drain-source on-resistance(note 2)	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-3.5A			45	mΩ
		V_{GS} =-2.5V, I_D =-3A			60	mΩ
		V_{GS} =-1.8V, I_D =-2A			90	mΩ
Forward tranconductance(note 2)	g_{FS}	V_{DS} =-5V, I_D =-4.1A	6			S
Diode forward voltage	V_{SD}	I_S=-3.3A, V_{GS} = 0V			-1.2	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =-4V,V_{GS} =0V,f =1MHz		740		pF
Output Capacitance	C_{oss}			290		pF
Reverse Transfer Capacitance	C_{rss}			190		pF
SWITCHING CHARACTERISTICS (note 3,4)						
Turn-on delay time	$t_{d(on)}$	V_{GEN}=-4.5V,V_{DD}=-4V, I_D=-3.3A,R_G=1Ω , R_L=1.2Ω			20	ns
Turn-on rise time	t_r				53	ns
Turn-off delay time	$t_{d(off)}$				48	ns
Turn-off fall time	t_f				20	ns
Total Gate Charge	Q_g	V_{DS}=-4V,I_D=-4.1A, V_{GS}=-2.5V			9	nC
Gate-Source Charge	Q_{gs}			1.2		nC
Gate-Drain Charge	Q_{gd}			1.6		nC

Notes :

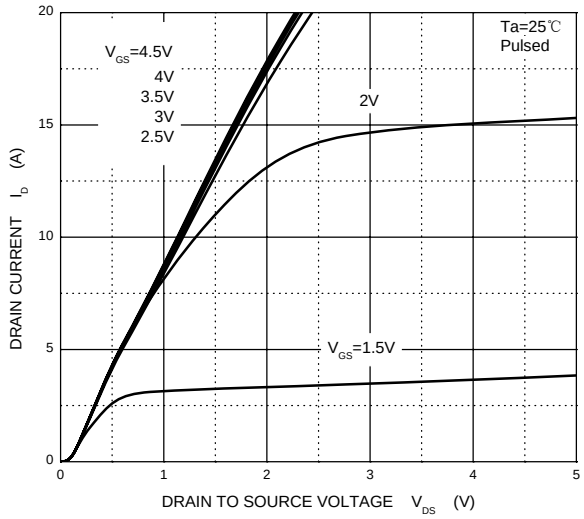
2.Pulse Test:Pulse width=300us,duty cycle≤2%.
3.Switching characteristics are independent of operating junction temperature.
4.Graranted by design,not subject to producting.

Typical Characteristics

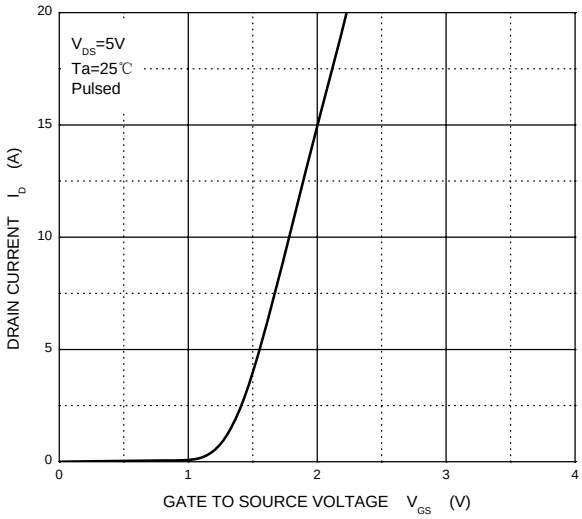
Micro Commercial Components

N-Channel MOS

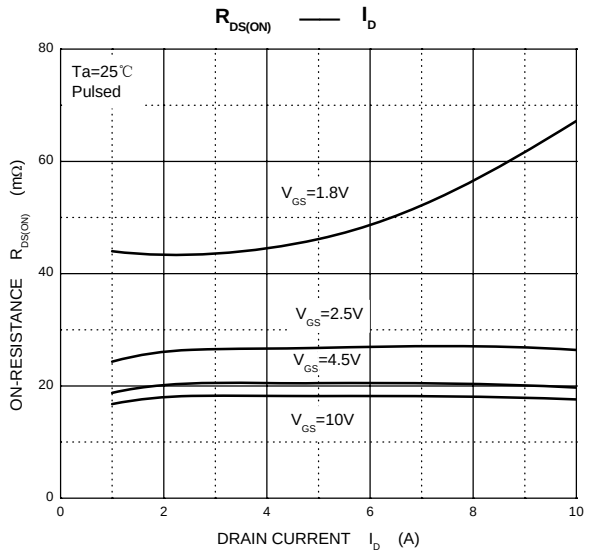
Output Characteristics



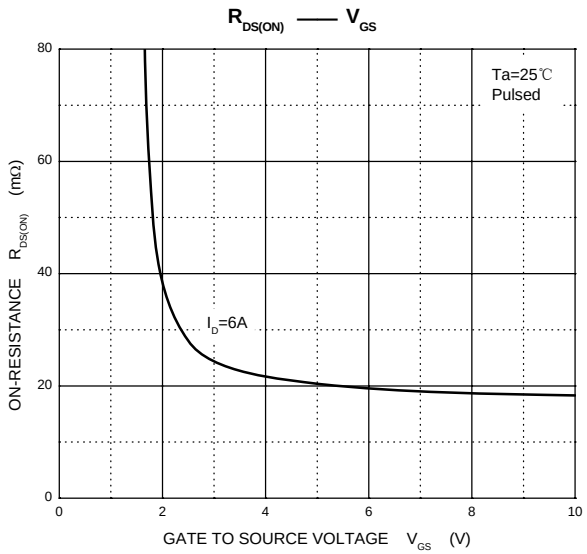
Transfer Characteristics



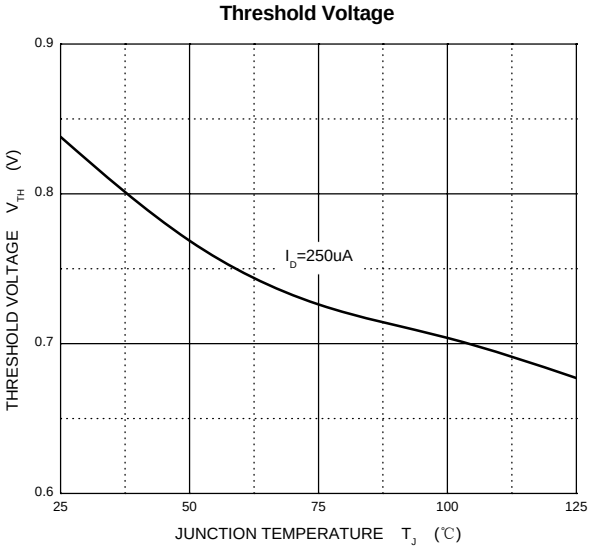
$R_{DS(ON)}$ — I_D



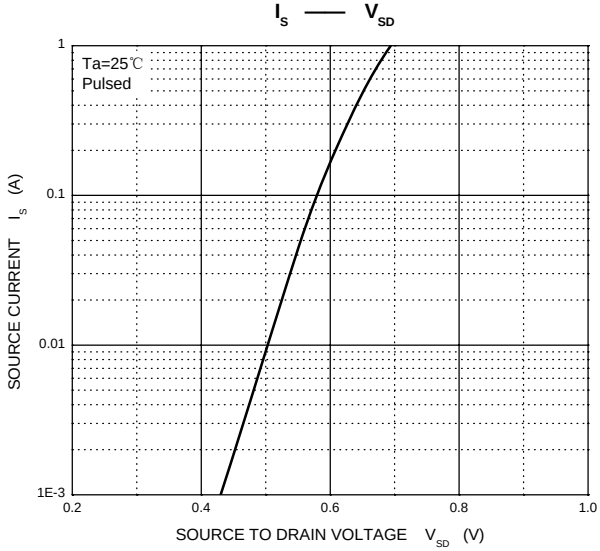
$R_{DS(ON)}$ — V_{GS}



Threshold Voltage



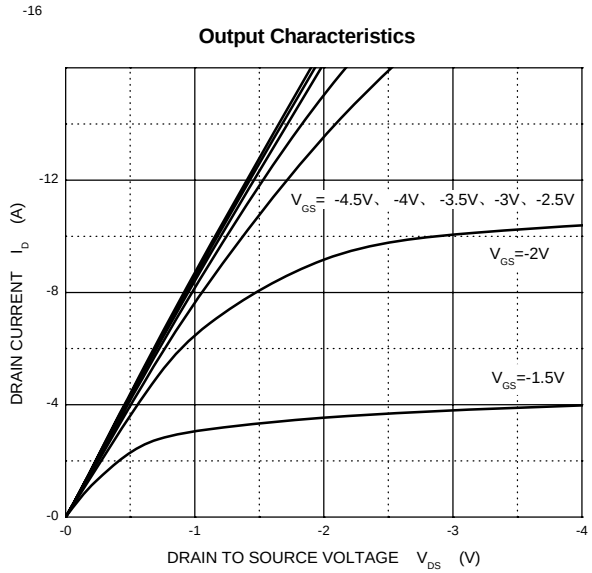
I_S — V_{SD}



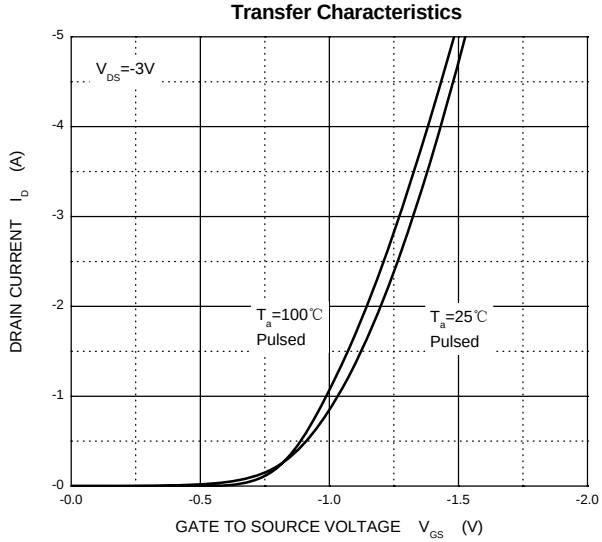
Typical Characteristics

P-Channel MOS

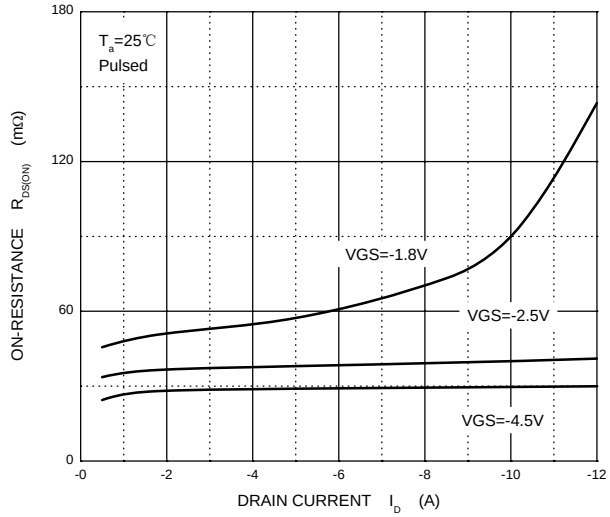
Output Characteristics



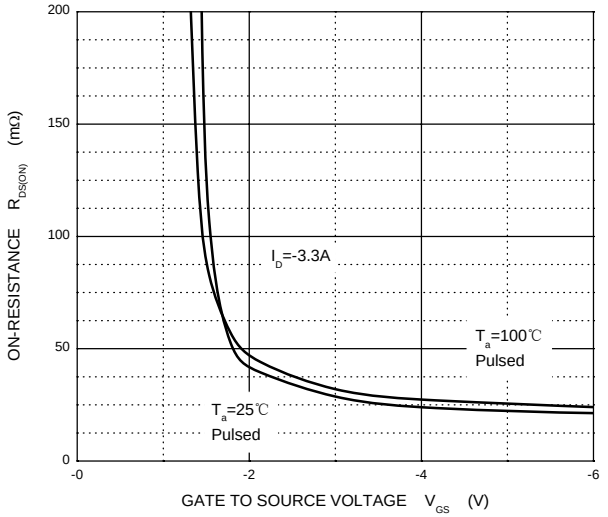
Transfer Characteristics



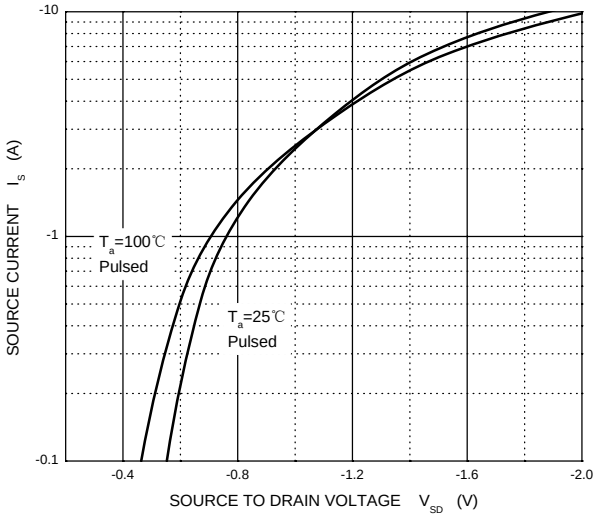
$R_{DS(ON)}$ —— I_D



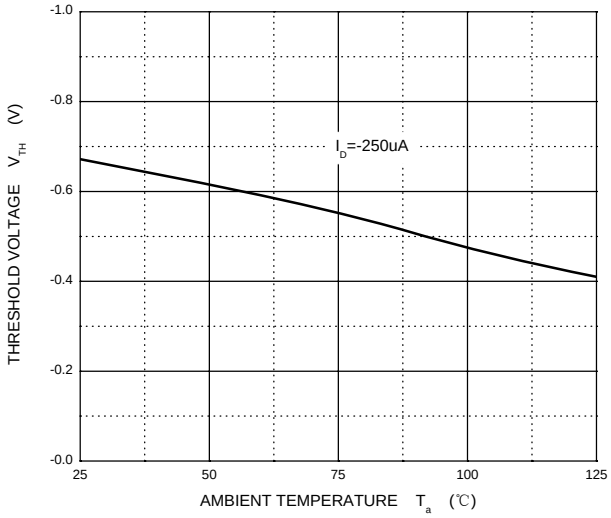
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage



Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:3.0Kpcs/Reel

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

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