



Micro Commercial Components



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## MCM3400A

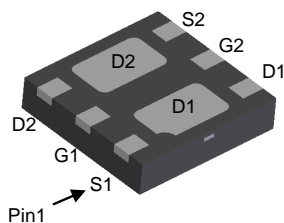
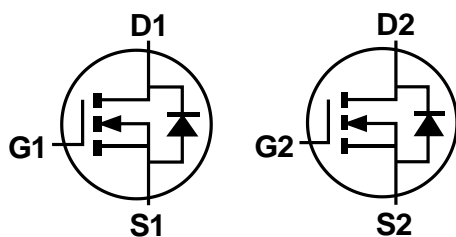
### Features

- Halogen free available upon request by adding suffix "-HF"
- Trench FET structure
- High dense cell design for extremely low  $R_{DS(ON)}$
- Rugged and reliable
- High speed switching
- DFN2020-6L package
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

#### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	30	V
$I_D$	Drain Current-Continuous	5.0	A
$I_{DM}$	Drain Current-Pulsed <sup>a</sup>	30	A
$V_{GS}$	Gate-source Voltage	$\pm 12$	V
$P_D$	Total Power Dissipation	1.4	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient <sup>b</sup>	89	°C/W
$T_J$	Operating Junction Temperature	-55 to +150	°C
$T_{STG}$	Storage Temperature	-55 to +150	°C

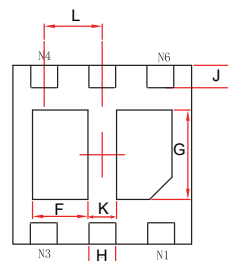
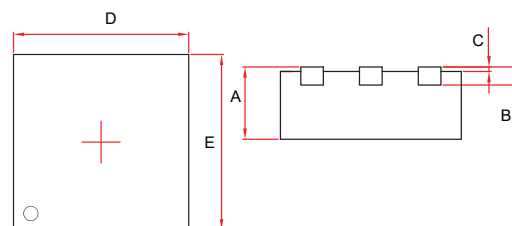
### Internal Block Diagram



Bottom View

### N-Channel Enhancement Mode Field Effect Transistor

#### DFN2020-6L



Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	.034	0.750	0.850	
B	0.008REF.		0.200REF.		
C	0.000	0.002	0.000	0.050	
D	0.077	0.081	1.950	2.050	
E	0.077	0.081	1.950	2.050	
F	0.017	0.027	0.440	0.690	
G	0.033	0.043	0.840	1.090	
H	0.010	0.014	0.250	0.350	
J	0.007	0.015	0.175	0.375	
K	0.010	0.014	0.250	0.350	
L	0.026TYP.		0.650TYP.		

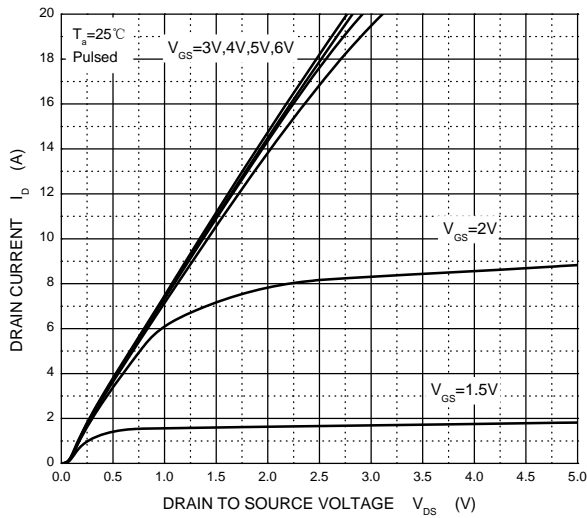
## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$			1	$\mu A$
Gate-source leakage current	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
On characteristics (note 3)						
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5.8A$		29	32	m $\Omega$
		$V_{GS} = 4.5V, I_D = 5A$		32	38	m $\Omega$
		$V_{GS} = 2.5V, I_D = 4A$		40	45	m $\Omega$
Forward tranconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 5A$	8			S
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.7		1.5	V
Dynamic Characteristics (note 4,5)						
Input capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$			1155	pF
Output capacitance	$C_{oss}$			108		pF
Reverse transfer capacitance	$C_{rss}$			84		pF
Gate resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$			3.6	$\Omega$
Switching Characteristics (note 4,5)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 15V,$ $R_L = 2.7\Omega, R_{GEN} = 3\Omega$			5	ns
Turn-on rise time	$t_r$				7	ns
Turn-off delay time	$t_{d(off)}$				40	ns
Turn-off fall time	$t_f$				6	ns
Drain-source diode characteristics and maximum ratings						
Diode forward voltage (note 3)	$V_{SD}$	$I_S = 1A, V_{GS} = 0V$			1	V

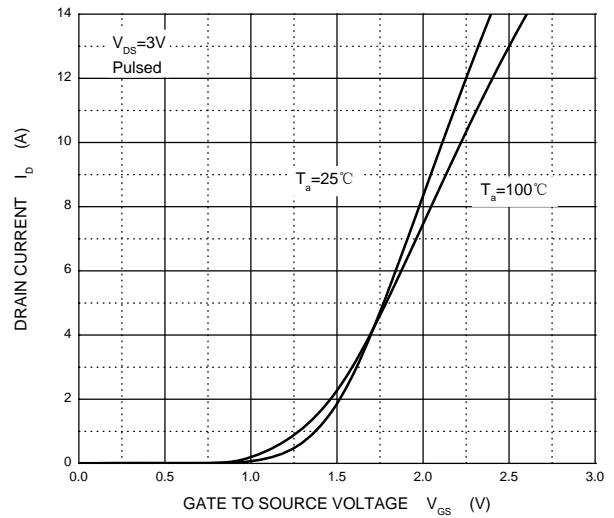
### Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t < 5$  sec.
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

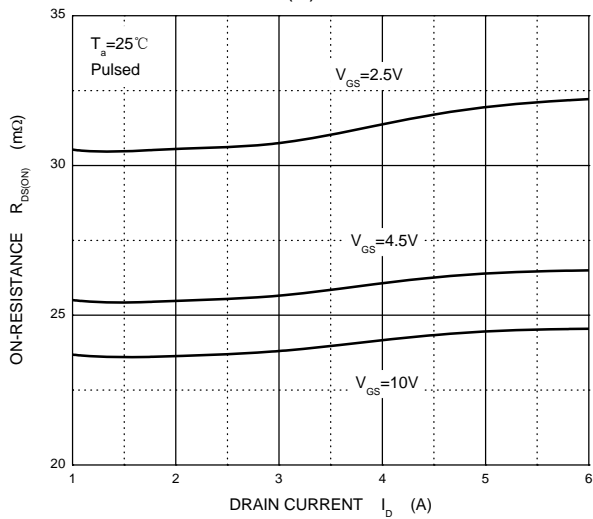
Output Characteristics



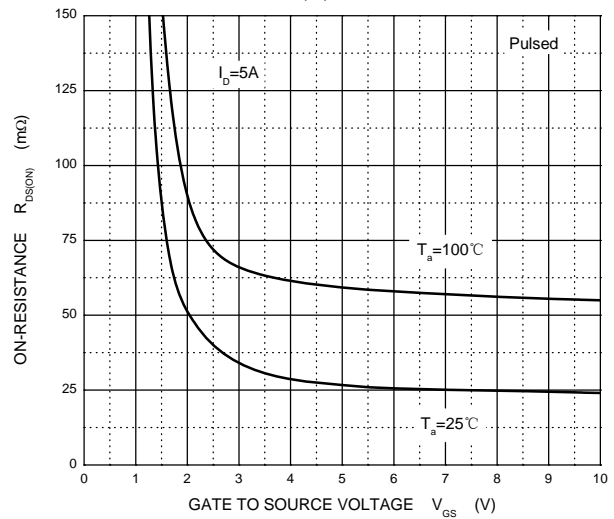
Transfer Characteristics



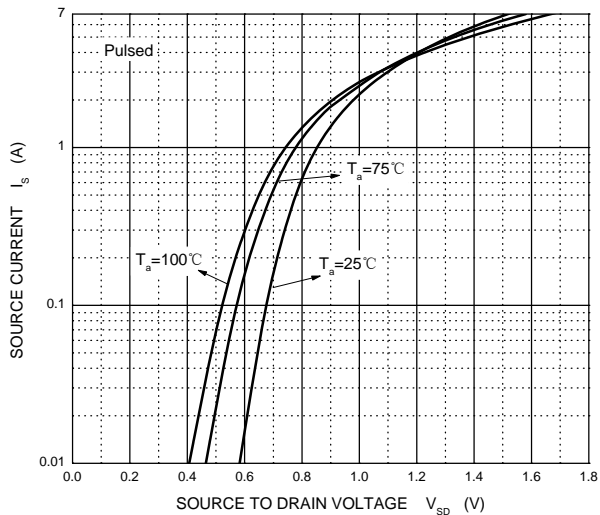
$R_{DS(ON)}$  —  $I_D$



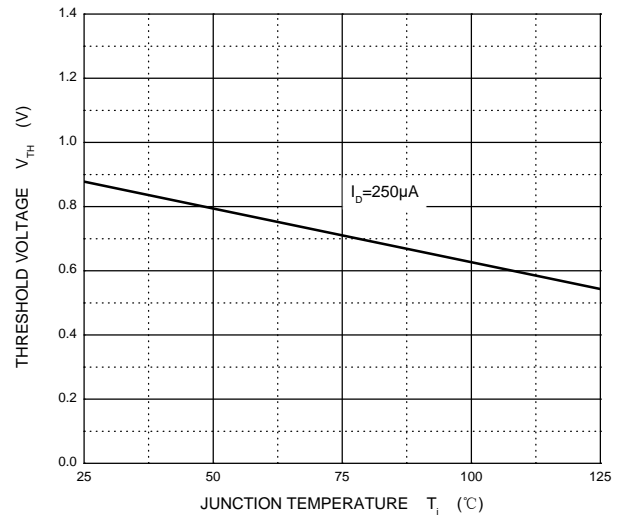
$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage



## Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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

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