



Micro Commercial Components



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SI3420

N-Channel Enhancement Mode Field Effect Transistor

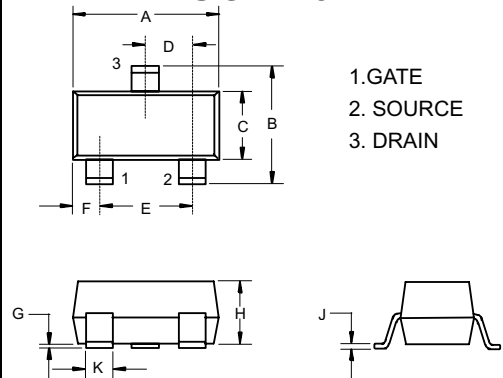
Features

- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Lead free product is acquired
- SOT-23 Package
- Marking Code: R20
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

Maximum Ratings @ 25°C Unless Otherwise Specified

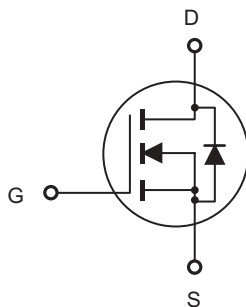
Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	20	V
I_D	Drain Current-Continuous	6	A
I_{DM}	Drain Current-Pulsed ^a	25	A
V_{GS}	Gate-source Voltage	± 12	V
P_D	Total Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^b	357	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$

SOT-23

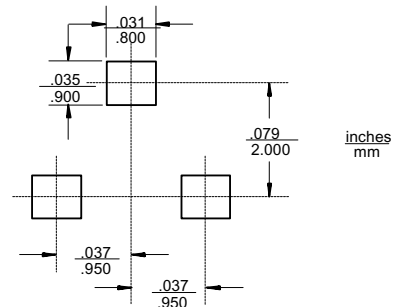


DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Internal Block Diagram



Suggested Solder Pad Layout



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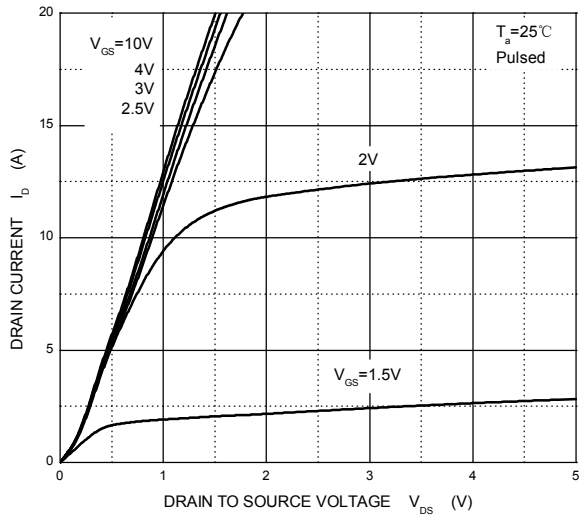
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Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

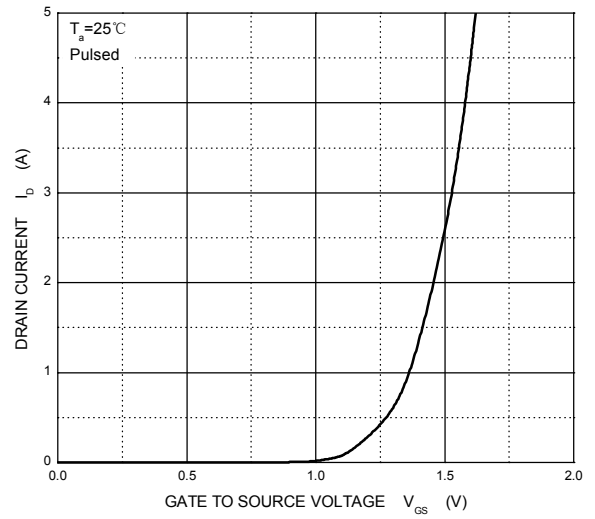
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	3	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6.0A$		19	24	m Ω
		$V_{GS} = 4.5V, I_D = 5.0A$		22	27	m Ω
		$V_{GS} = 2.5V, I_D = 4.0A$		35	42	m Ω
		$V_{GS} = 1.8V, I_D = 2.0A$			74	m Ω
Forward transconductance	g_{FS}	$V_{DS} = 5V, I_D = 3.8A$	4			S
Diode forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1.0A$		0.75	1	V
DYNAMIC PARAMETERS*						
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
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.5		Ω
SWITCHING PARAMETERS*						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DS} = 10V,$ $R_L = 1.7\Omega, R_{GEN} = 6\Omega$		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

* These parameters have no way to verify.

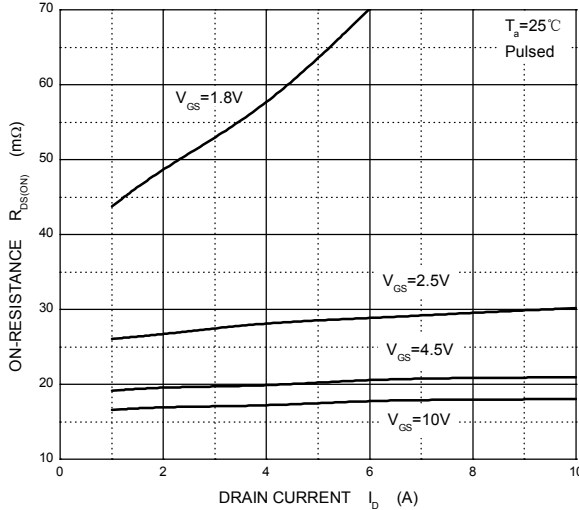
Output Characteristics



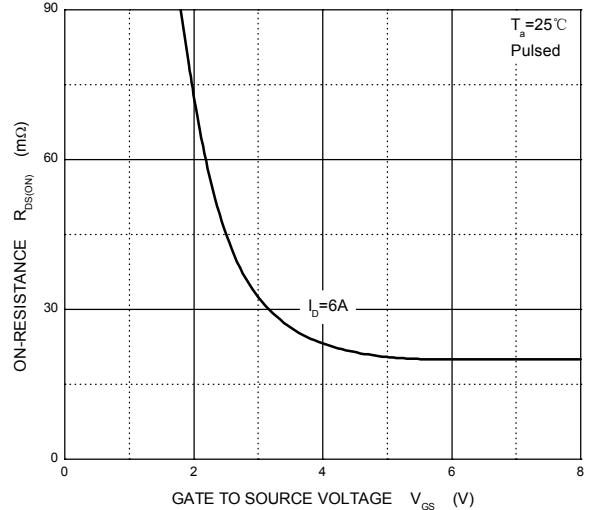
Transfer Characteristics



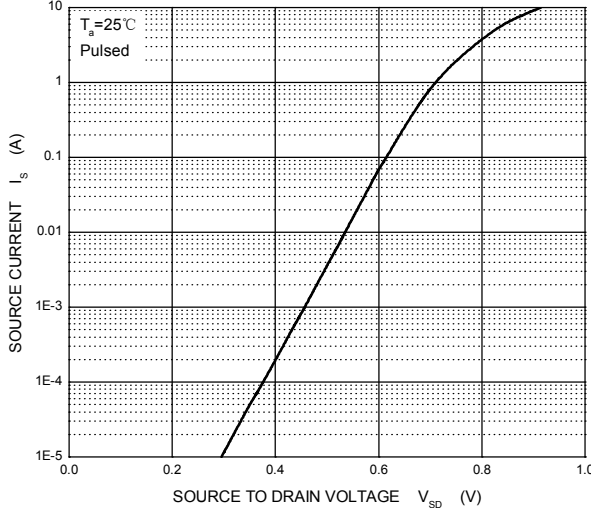
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}





TM

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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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