



Micro Commercial Components



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MCS8820

Features

- Advanced trench MOSFET process technology
- Excellent $R_{DS(ON)}$ and low gate charge
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking: S8820

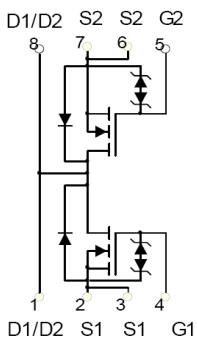
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	20	V
I_D	Drain Current-Continuous	7	A
I_{DM}	Pulsed Drain Current (note1)	30	A
V_{GS}	Gate-source Voltage	± 12	V
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	125	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$

Notes:

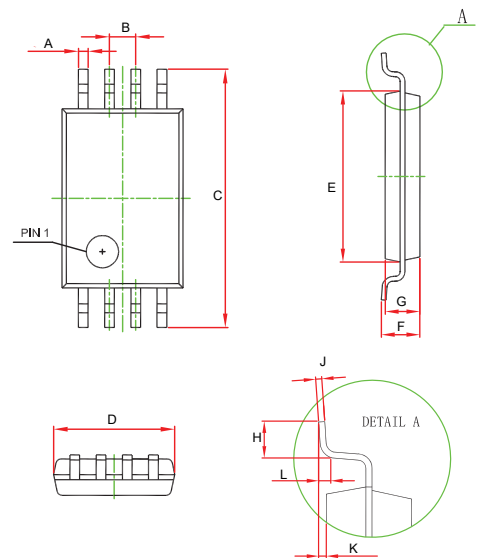
1. Repetitive Rating: Pulse width limited by junction temperature.

Equivalent Circuit



Dual N-Channel MOSFET

TSSOP-8



DIM	Dimensions				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.007	.012	0.190	0.300	
B	0.026BSC.		0.650BSC.		
C	0.246	0.258	6.250	6.550	
D	0.114	0.122	2.900	3.100	
E	0.169	0.177	4.300	4.500	
F	---	0.047	---	1.200	
G	0.031	0.039	0.800	1.000	
H	0.020	0.028	0.500	0.700	
J	0.004	0.008	0.090	0.200	
K	0.002	0.006	0.050	0.150	
L	0.010TYP.		0.250TYP.		

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise specified)

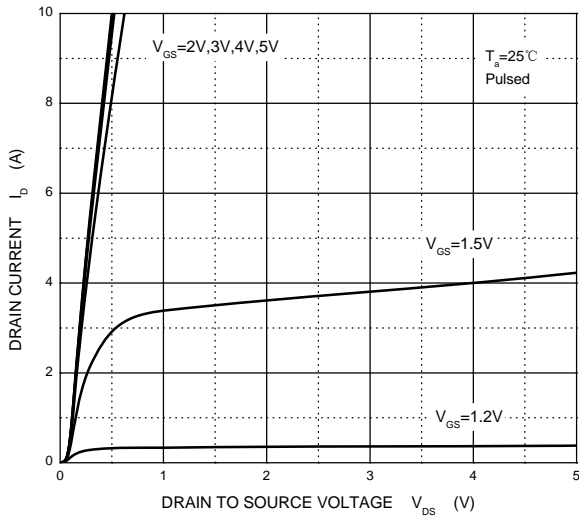
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 10	μA
Gate threshold voltage (note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.8	1.1	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$		FI	21	$m\Omega$
		$V_{GS} = 4.5V, I_D = 6.6A$		F1	24	$m\Omega$
		$V_{GS} = 3.8V, I_D = 6A$		F1E	28	$m\Omega$
		$V_{GS} = 2.5V, I_D = 5.5A$		GF	32	$m\Omega$
		$V_{GS} = 1.8V, I_D = 2A$		HF	50	$m\Omega$
Forward tranconductance (note 1)	g_{FS}	$V_{DS} = 5V, I_D = 7A$	9			S
Diode forward voltage(note 1)	V_{SD}	$I_S = 1A, V_{GS} = 0V$			1	V
DYNAMIC PARAMETERS (note 2)						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		650		pF
Output Capacitance	C_{oss}			140		pF
Reverse Transfer Capacitance	C_{rss}			60		pF
Total gate charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6A$		8		nC
Gate-source charge	Q_{gs}			2.5		nC
Gate-drain charge	Q_{gd}			3		nC
SWITCHING PARAMETERS(note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DD} = 10V,$ $R_L = 1.5\Omega, R_{GEN} = 3\Omega$		0.5		ns
Turn-on rise time	t_r			1		ns
Turn-off delay time	$t_{d(off)}$			12		ns
Turn-off fall time	t_f			4		ns

Notes :

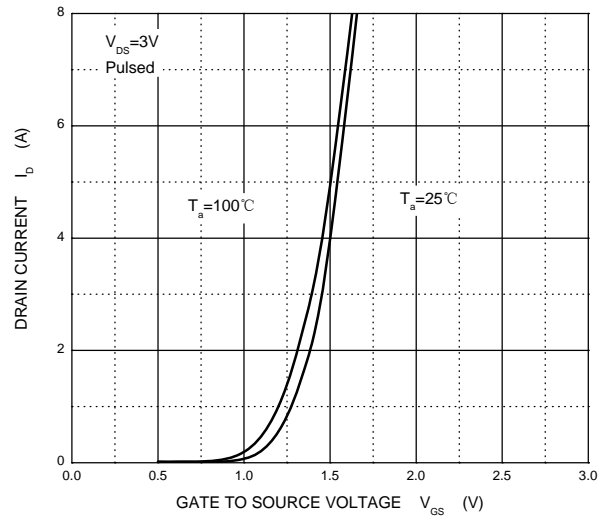
1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
2. Guaranteed by design, not subject to production testing.

Typical Characteristics

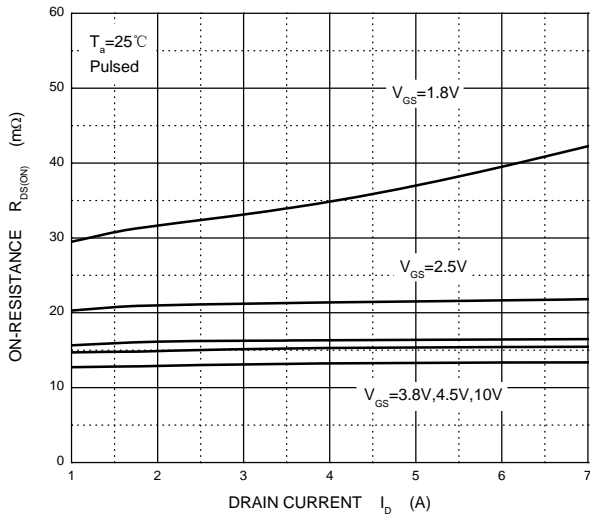
Output Characteristics



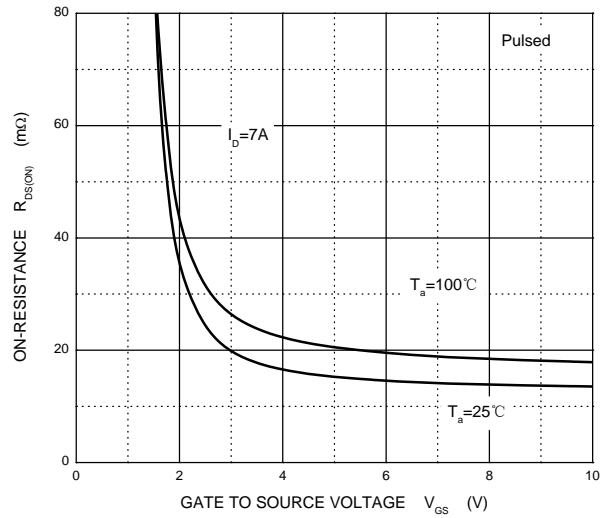
Transfer Characteristics



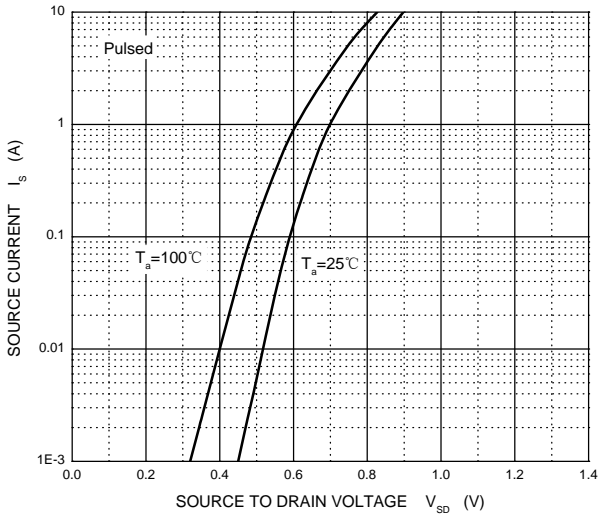
$R_{DS(ON)}$ — I_D



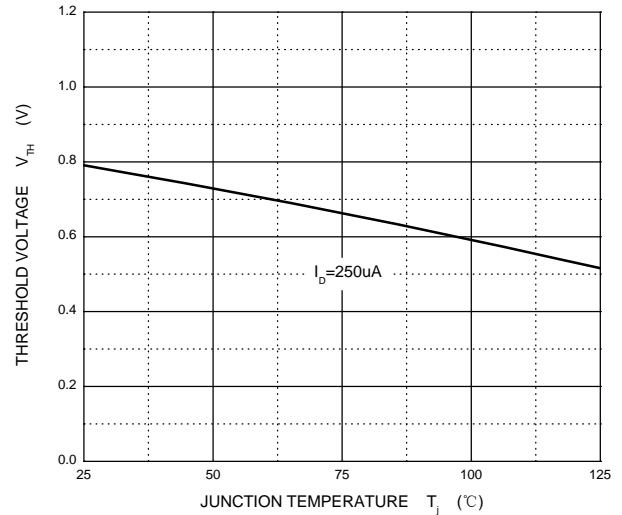
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage





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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:5Kpcs/Reel

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

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