



Micro Commercial Components



Micro Commercial Components  
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# MCS2010

## Dual N-Channel MOSFET

### Features

- TrenchFET Power MOSFET
- 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: S2010

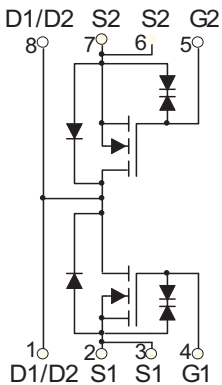
### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	20	V
$I_D$	Drain Current-Continuous	10	A
$I_{DM}$	Pulsed Drain Current (note1)	36	A
$V_{GS}$	Gate-source Voltage	$\pm 10$	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	$^{\circ}C$

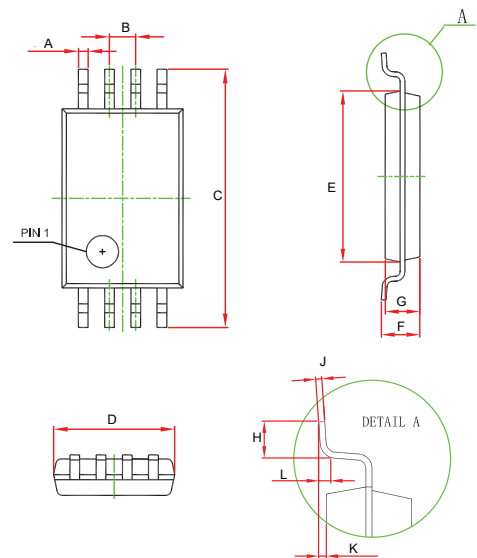
#### Notes:

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

### Equivalent Circuit



### 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<sub>a</sub>=25°C unless otherwise specified)**

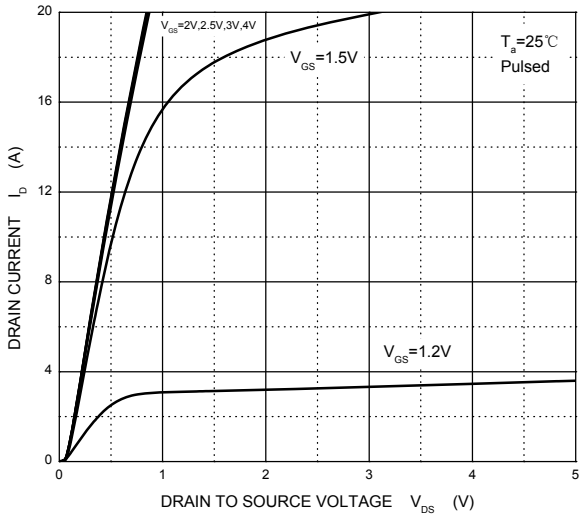
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> = 0V			±10	μA
Gate threshold voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.3		1	V
Drain-source on-resistance(note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	5.5		9.5	mΩ
		V <sub>GS</sub> =4V, I <sub>D</sub> =10A	5.8		10	mΩ
		V <sub>GS</sub> =3.5V, I <sub>D</sub> =9A			10.5	mΩ
		V <sub>GS</sub> =3.1V, I <sub>D</sub> =9A	3		11.5	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =8A	8		13	mΩ
Forward tranconductance(note 3)	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =10A		65		S
Diode forward voltage (note 3)	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> = 0V			1	V
<b>DYNAMIC PARAMETERS (note 4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f =1MHz	1000		1510	pF
Output Capacitance	C <sub>oss</sub>		150		290	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		100		235	pF
<b>SWITCHING PARAMETERS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, R <sub>GEN</sub> =3Ω, R <sub>L</sub> =1 Ω		1.1		ns
Turn-on rise time	t <sub>r</sub>			2.6		ns
Turn-off delay time	t <sub>d(off)</sub>			7		ns
Turn-off fall time	t <sub>f</sub>			7.4		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V I <sub>D</sub> =10A	10		15	nC
Gate-Source Chage	Q <sub>gs</sub>			5.5		nC
Gage-Drain Charge	Q <sub>gd</sub>			6.5		nC

**Notes :**

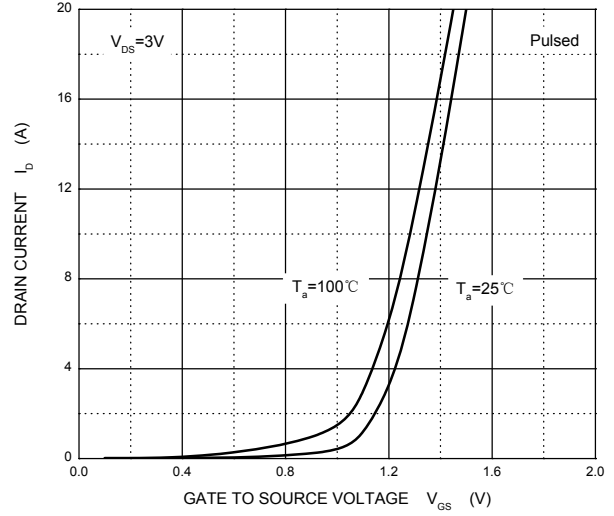
- 1.Repetitive rating: Pluse width limited by maximum junction temperature
- 2.Surface mounted on FR4 board, t ≤10 sec.
3. Pulse test : Pulse width ≤300μs, duty cycle ≤2%.
4. Guaranteed by design, not subject to production.

**Typical Characteristics**

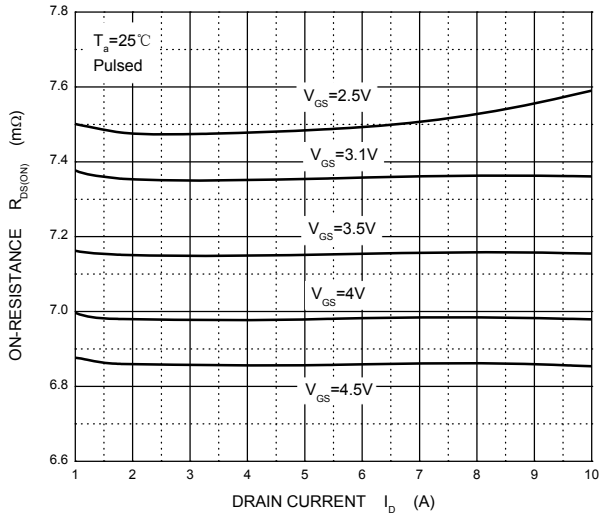
**Output Characteristics**



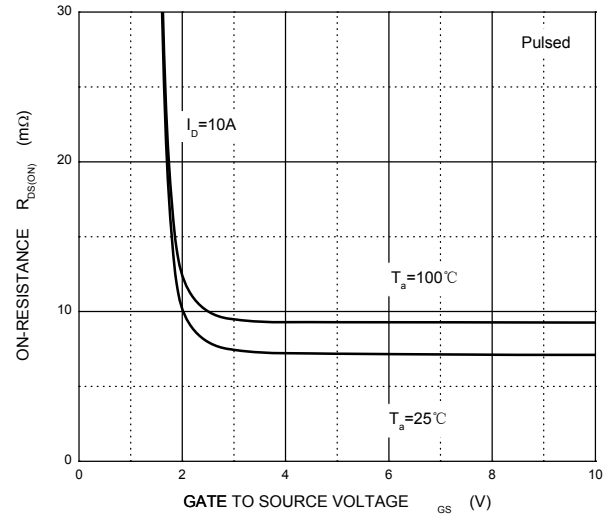
**Transfer Characteristics**



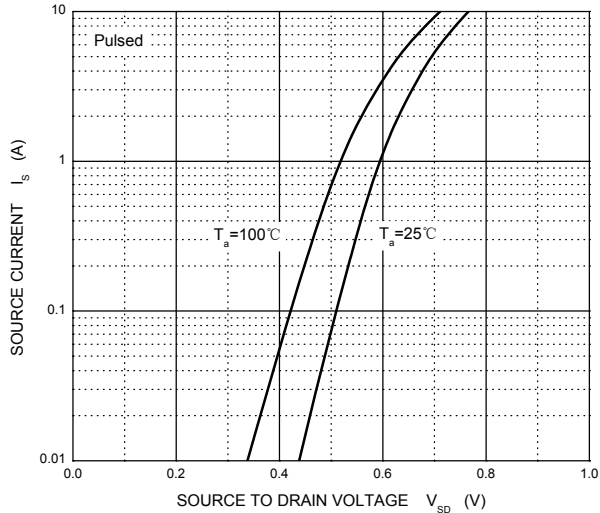
**$R_{DS(ON)}$  —  $I_D$**



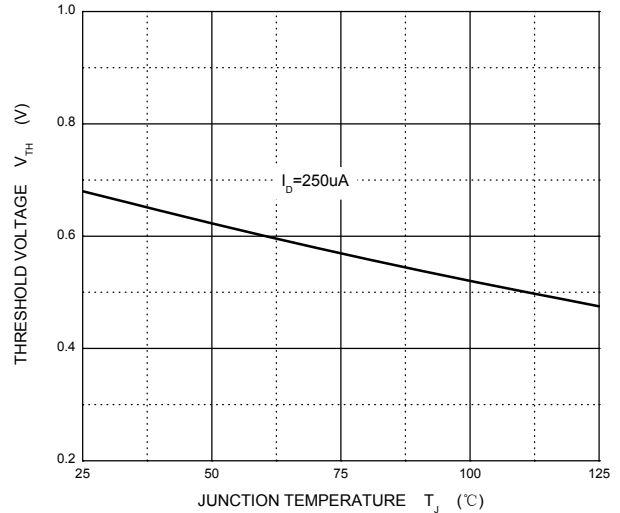
**$R_{DS(ON)}$  —  $V_{GS}$**



**$I_S$  —  $V_{SD}$**



**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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