

N-Channel Enhancement Mode

General Description

The 9205 uses advanced technology to provide fast switching, low on-resistance and cost-effectiveness. This device is suitable for all commercial-industrial surface mount applications.

Features

- $R_{DS(ON)} \leq 38m\Omega @ V_{GS} = 4.5V$
- Ultra low gate charge (typical 23nC)
- Low reverse transfer Capacitance (C_{RSS} = typical 150pF)
- Fast switching capability
- Advanced energy Specified
- Improved dv/dt capability, high ruggedness

Ordering Information

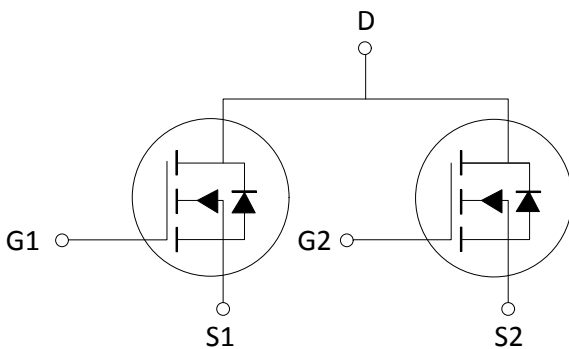
9205

PACKAGE TYPE
CPC8

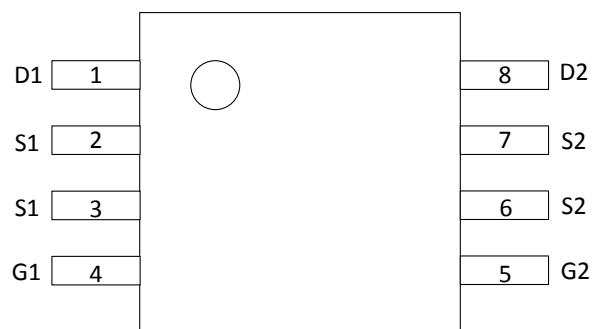
TEMPERATURE RANGE
-40°C~+85°C

OVERCHARGE PROTECTION
4.3V±50mV

Symbol



Pin Configuration





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Absolute Maximum Ratings

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source voltage		V_{GSS}	± 12	V
Drain Current(Note 2)	Continuous	I_D	6	A
	Pulsed	I_{DM}	20	A
Power Dissipation($T_a=25^\circ\text{C}$)(Note 3)		P_D	1	W
Junction to Ambient(Note 2)		θ_{JA}	125	$^\circ\text{C}/\text{W}$
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 to +150	$^\circ\text{C}$

Note:1.Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2.Pulse Test:Pulse width $\leq 300\mu\text{s}$,Duty cycle $\leq 2\%$

3.Pulse width limited by $T_{J(MAX)}$

Electrical Characteristics

$T_J=25^\circ\text{C}$ unless otherwise specified

PARAMETER	STMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTIC						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu\text{A}$	20			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	$I_D=1\text{mA}$,Reference to 25°C		0.03		$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5		1.5	V
Drain-Source On-State Resistance(Note)	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=6.0\text{A}$			38	$\text{m}\Omega$
		$V_{GS}=2.5V, I_D=5.2\text{A}$			48	$\text{m}\Omega$
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=20V, V_{GS}=4.5V, I_D=250\mu\text{A}$		1035		pF
Output Capacitance	C_{OSS}			320		pF
Reverse Transfer Capacitance	C_{RSS}			150		pF
SWITCHING PARAMETERS						
Turn-On Delay Time(Note)	$t_{D(ON)}$	$V_{GS}=5V, V_{DS}=10V, R_D=250\mu\text{A}, R_G=6\Omega, I_D=1\text{A}$		30		ns
Turn-On Rise Time	t_R			70		ns
Turn-Off Delay Time	$t_{D(OFF)}$			40		ns
Turn-Off Rise Time	t_F			65		ns

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Electrical Characteristics(Continued)

 T_J=25° C unless otherwise specified

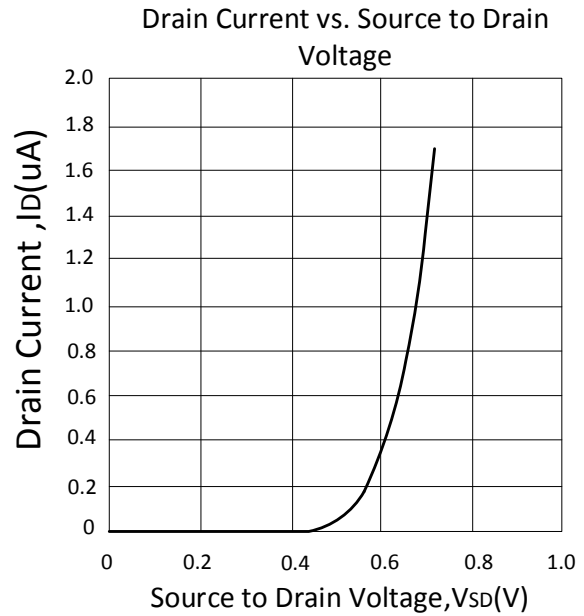
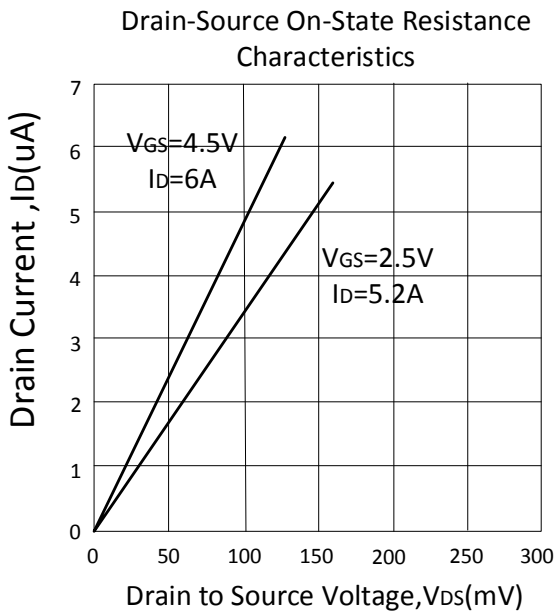
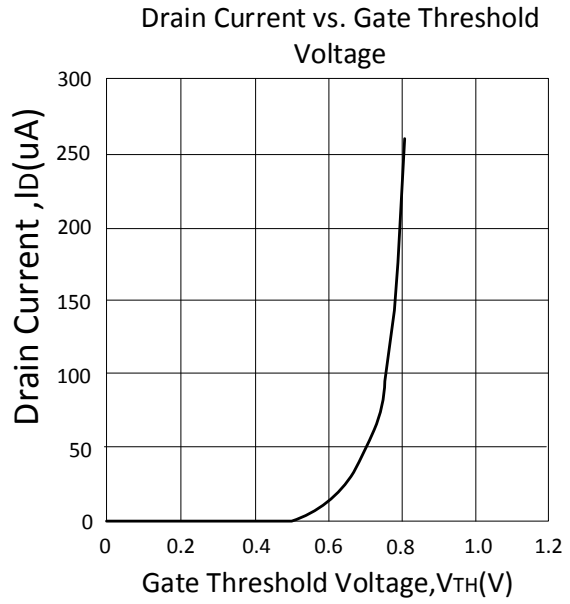
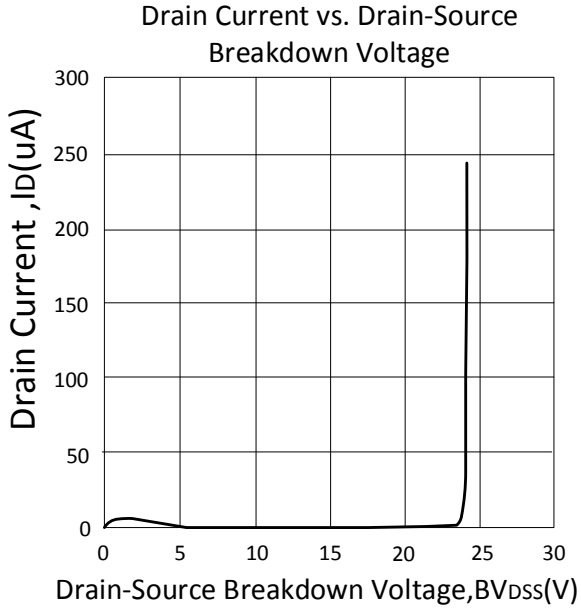
PARAMETER	STMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Total Gate Charge(Note)	Q _G	V _{DS} =20V,V _{GS} =5V,I _D =6.0A		23		nC
Gate Source Charge	Q _{GS}			4.5		nC
Gate Drain Charge	Q _{GD}			7		nC
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note)	V _{SD}	I _S =1.7A,V _{GS} =0V			1.2	V
Diode Continuous Forward Current	I _S	V _D =V _G ,V _S =1.3V			1.54	A

Note:Surface mounted on 1 in2 copper pad of FR4 board;208° C/W when mounted on min.



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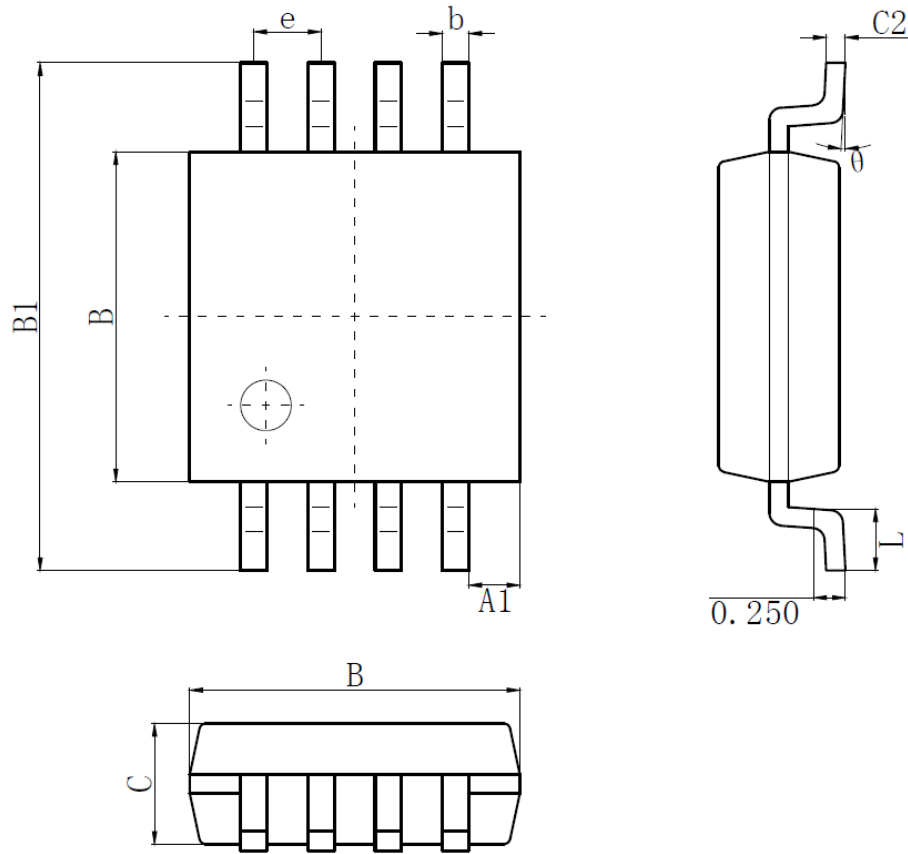
Typical Characteristics





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Package Outline



SYMBOL	MIN(mm)	MAX(mm)	SYMBOL	MIN(mm)	MAX(mm)
A	2.50	2.70	C	0.85	1.05
A1	0.35	0.45	C1	0.00	0.15
e	0.53(BSC)		C2	0.15	0.18
B	2.50	2.70	L	0.40	0.60
B1	3.85	4.15	θ	0°	8°
b	0.16	0.26			