

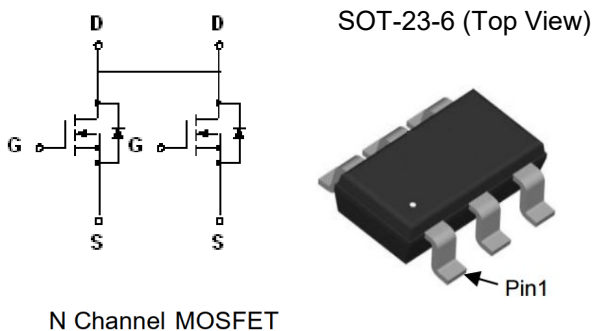
## Description

CM8205A is the N-Channel enhancement mode power field effect transistors with high cell density, trench technology. This high density process and design have been optimized switching performance and especially tailored to minimize on-state resistance.

## Features

- $V_{DS}$ : 20V
- $I_D$ : 6A
- $R_{DS(on)}$  (@ $V_{GS}=4.5V$ ) : < 25m $\Omega$
- $R_{DS(on)}$  (@ $V_{GS}=2.5V$ ) : < 40m $\Omega$
- High density cell design for extremely low  $R_{DS(on)}$
- Excellent on-resistance and DC current capability

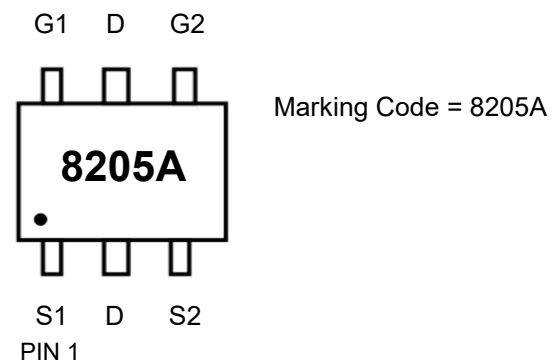
## Equivalent Circuit and Pin Configuration



## Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Portable Instrumentation
- Load switch

## Marking Information



## Ordering Information

Part Number	Packaging	Reel Size
CM8205A	3000/Tape & Reel	7 inch

## Absolute Maximum Ratings (TA=25 °C unless otherwise noted)

Parameter	Symbol	Maximum	Unit	
Drain-source Voltage	$V_{DS}$	20	V	
Gate-source Voltage	$V_{GS}$	$\pm 12$	V	
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	6	A
		$T_A=70^\circ C$	4.7	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	24	A	
Total Power Dissipation @ $T_A=25^\circ C$ <sup>(2)</sup>	$P_D$	1.4	W	
Thermal Resistance Junction-to-Ambient <sup>(2)</sup>	$R_{\theta JA}$	90	$^\circ C/W$	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$	

**Electrical Characteristics (T<sub>J</sub>=25 °C unless otherwise noted)**

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>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> =16V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4		1.0	V
Static Drain-Source on-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =4.5A		22	25	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.5A		27	40	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =4.5A, V <sub>GS</sub> =0V			1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				6	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		357		pF
Output Capacitance	C <sub>oss</sub>			46		
Reverse Transfer Capacitance	C <sub>rss</sub>			41		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =5V, V <sub>DS</sub> =20V, I <sub>D</sub> =6A		6.5		nC
Gate Source Charge	Q <sub>gs</sub>			0.6		
Gate Drain Charge	Q <sub>gd</sub>			2.4		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =5V, V <sub>DD</sub> =10V, I <sub>D</sub> =1A R <sub>L</sub> =10Ω, R <sub>GEN</sub> =6Ω		30		ns
Turn-on Rise Time	t <sub>r</sub>			70		
Turn-off Delay Time	t <sub>D(off)</sub>			40		
Turn-off Fall Time	t <sub>f</sub>			65		

Noted: (1) Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

(2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. With 2oz Copper, t ≤ 10s

**Typical Performance Characteristics**

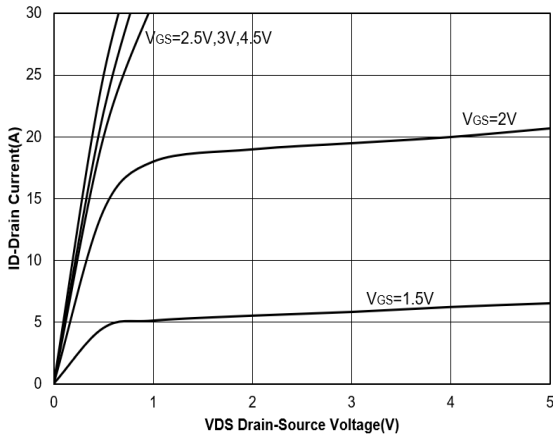


Figure 1. Output Characteristics

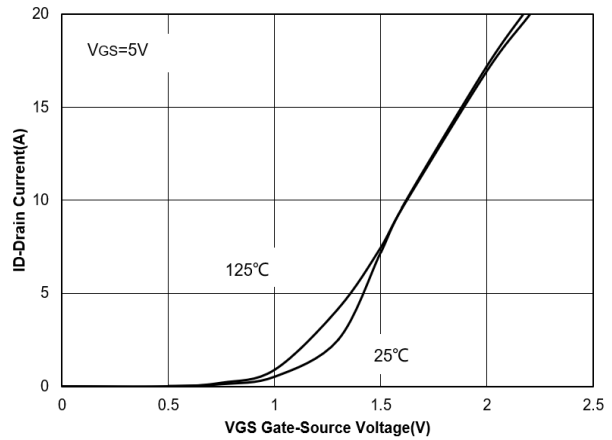


Figure 2. Transfer Characteristics

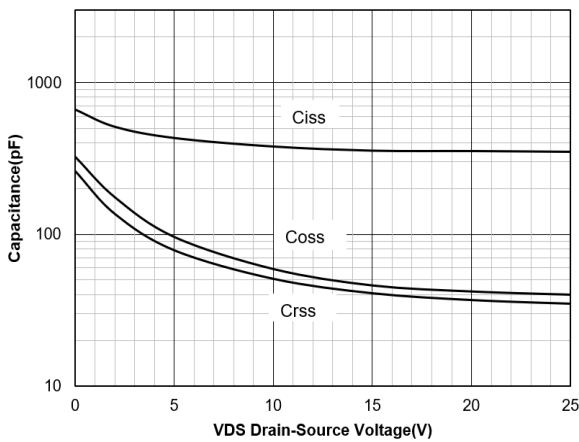


Figure 3. Capacitance Characteristics

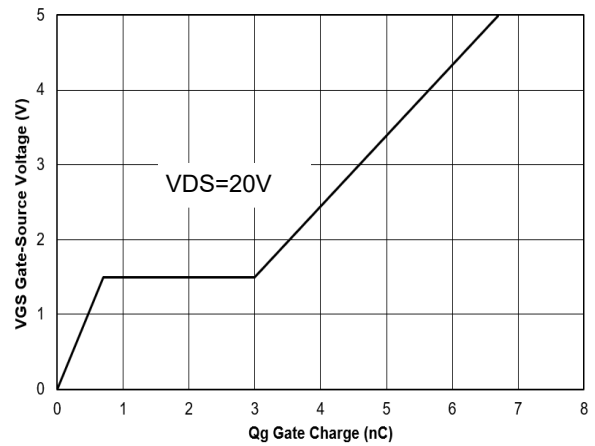


Figure 4. Gate Charge

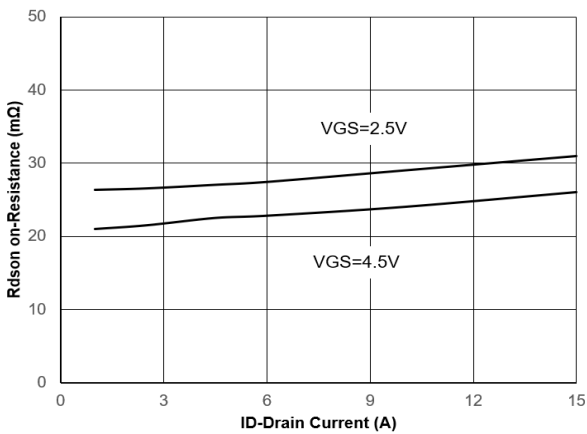


Figure 5. Drain-Source on Resistance

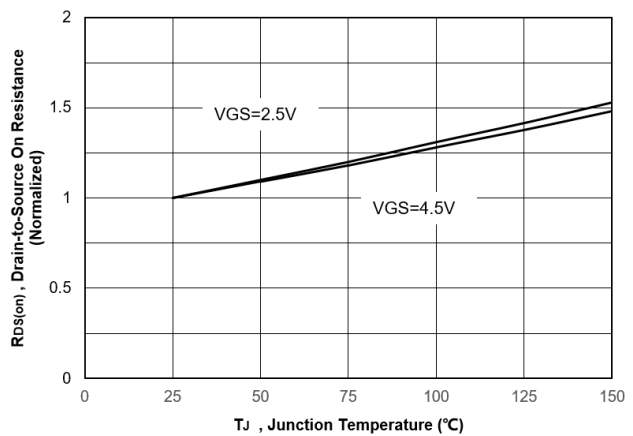


Figure 6. Normalized On-Resistance Vs. Temperature

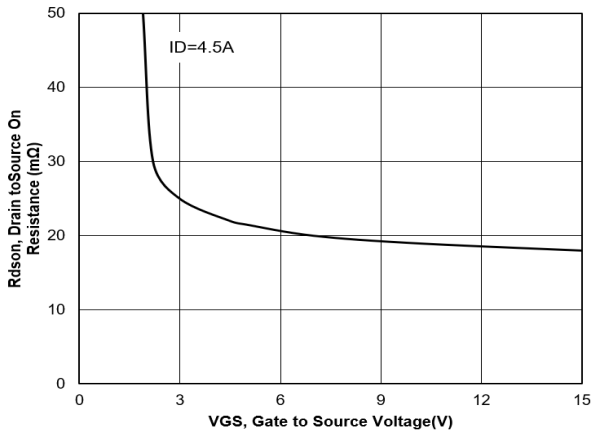


Figure 7. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

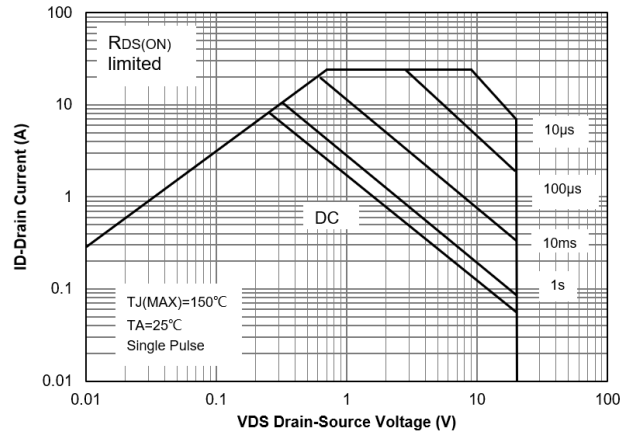


Figure 8. Safe Operation Area

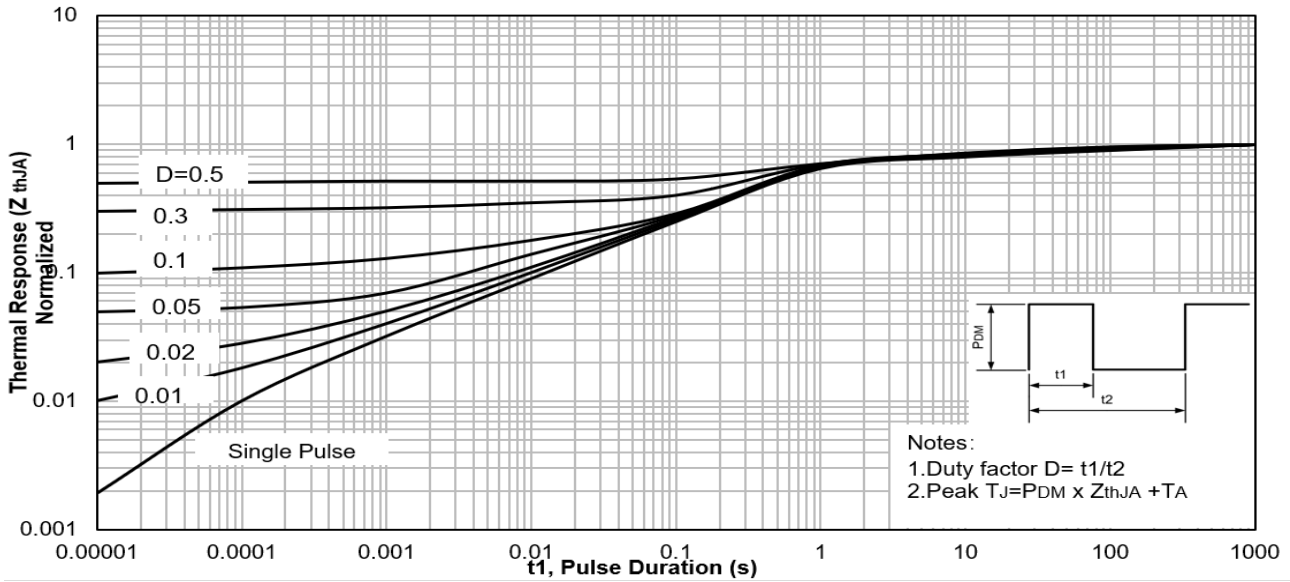


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

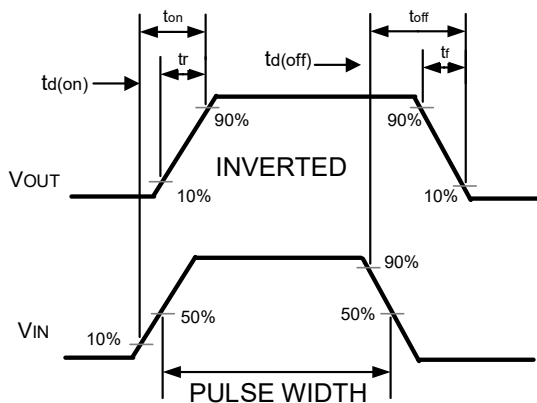
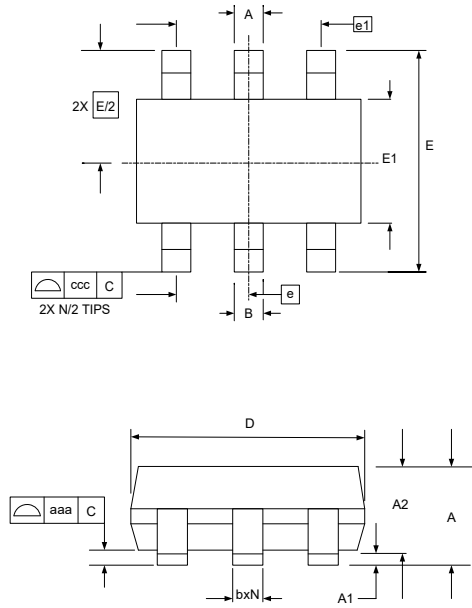


Figure 10. Switching wave

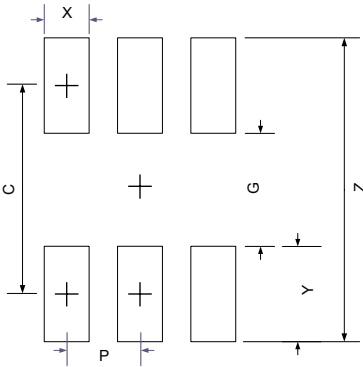
### SOT-23-6 Package Outline Drawing

(Unit : mm)



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90		1.45	0.035		0.057
A1	0.00		0.15	0.000		0.006
A2	0.90	1.15	1.30	0.035	0.045	0.051
b	0.25		0.50	0.010		0.020
c	0.08		0.22	0.003		0.009
D	2.80	2.90	3.10	0.110	0.114	0.122
E1	1.50	1.60	1.75	0.060	0.063	0.069
E	2.80 BSC			0.110 BSC		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
N	6			6		
aaa	0.10			0.004		
ccc	0.20			0.008		

### Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.50	0.098
G	1.40	0.055
P	0.95	0.037
X	0.60	0.024
Y	1.10	0.043
Z	3.60	0.141

### Contact Information

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