

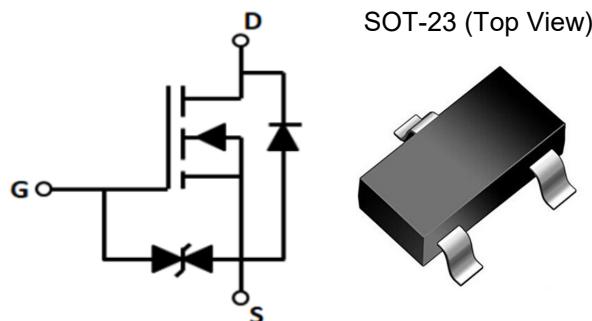
Description

CM3416E 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: 7.2A
- R_{DS(on)} (@V_{GS}=4.5V) : < 18mΩ
- R_{DS(on)} (@V_{GS}=2.5V) : < 22mΩ
- High density cell design for extremely low R_{DS(on)}
- Excellent on-resistance and DC current capability

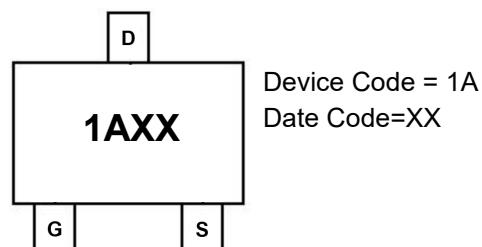
Equivalent Circuit and Pin Configuration



Applications

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

Marking Information



Ordering Information

Part Number	Packaging	Reel Size
CM3416E	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}	±12	V
Continuous Drain Current	I _D	7.2	A
		5.8	A
Pulsed Drain Current ⁽¹⁾	I _{DM}	29	A
Total Power Dissipation @ TA=25°C ⁽²⁾	P _D	1.4	W
Thermal Resistance Junction-to-Ambient ⁽²⁾	R _{θJA}	90	°C/W
Junction and Storage Temperature Range	T _{J,T STG}	-55 to +150	°C

Electrical Characteristics (T_J=25 °C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BVDSS	V _{GS} =0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _D =20V, V _{GS} =0V, T _C =25°C		1		μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _D =0V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _D =V _{GS} , I _D =250μA	0.45		1.0	V
Static Drain-Source on-Resistance	R _D (on)	V _{GS} =4.5V, I _D =7.2A		13	18	mΩ
		V _{GS} =2.5V, I _D =4A		17	22	
Diode Forward Voltage	V _{SD}	I _S =7.2A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				7.2	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _D =10V, V _{GS} =0V, f=1MHz		765		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			112		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _D =10V, I _D =7.2A		9.4		nC
Gate Source Charge	Q _{gs}			1.2		
Gate Drain Charge	Q _{gd}			2.8		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _D =10V, I _D =7A, R _L =1.5Ω, R _{GEN} =3Ω		1.2		ns
Turn-on Rise Time	t _r			2.4		
Turn-off Delay Time	t _{D(off)}			22		
Turn-off Fall Time	t _f			7		

Noted: (1) Pulse Test: Pulse Width≤300us,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

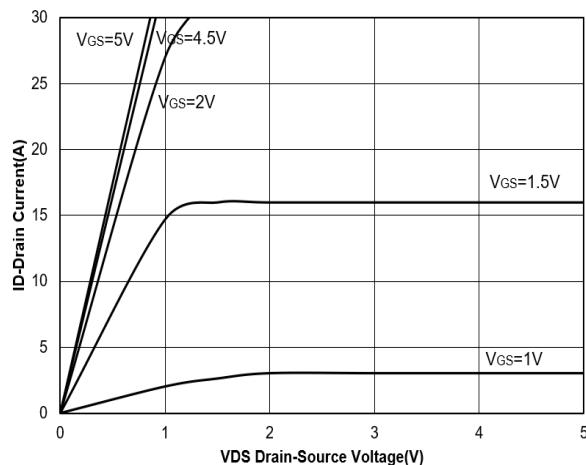


Figure 1. Output Characteristics

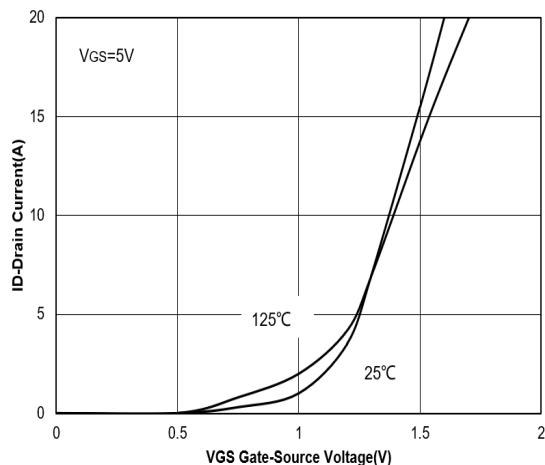


Figure 2. Transfer Characteristics

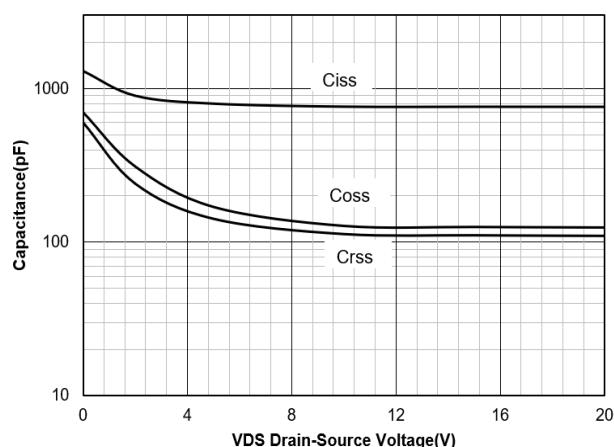


Figure 3. Capacitance Characteristics

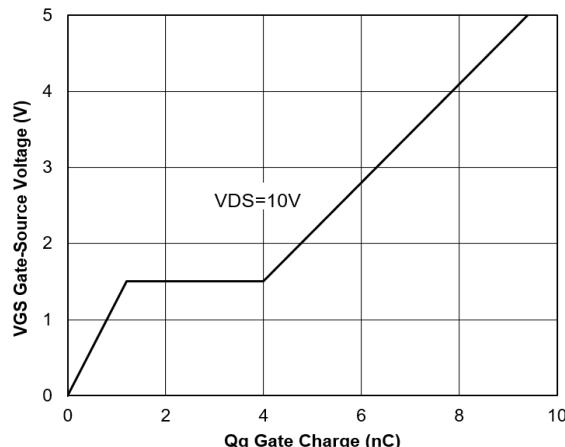


Figure 4. Gate Charge

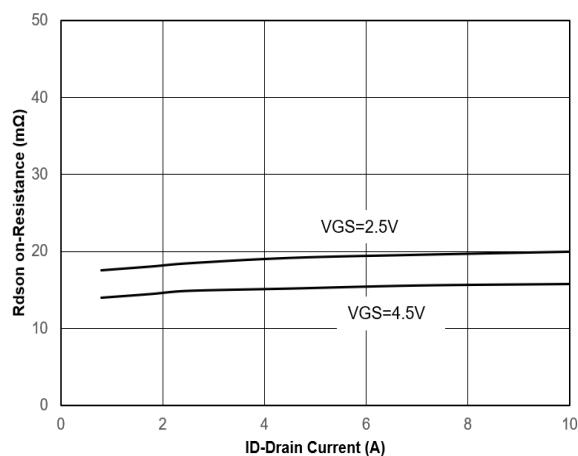


Figure 5. Drain-Source on Resistance

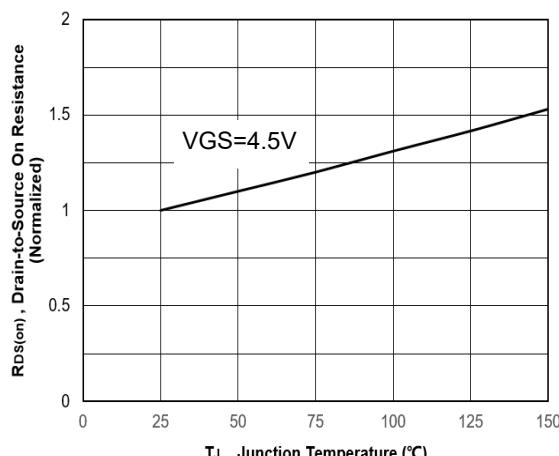


Figure 6. Normalized On-Resistance Vs. Temperature

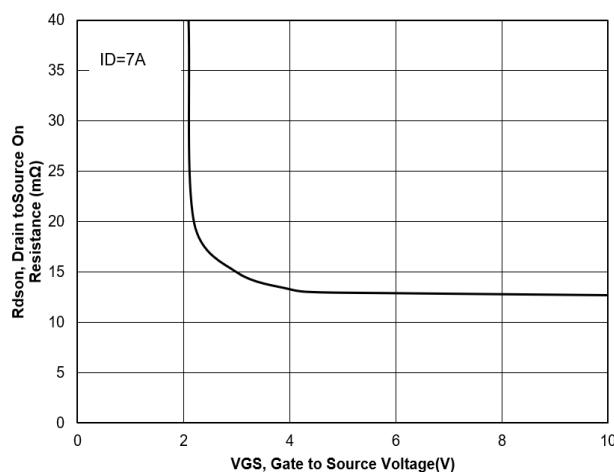


Figure 7. On-Resistance VS
Gate-Source Voltage

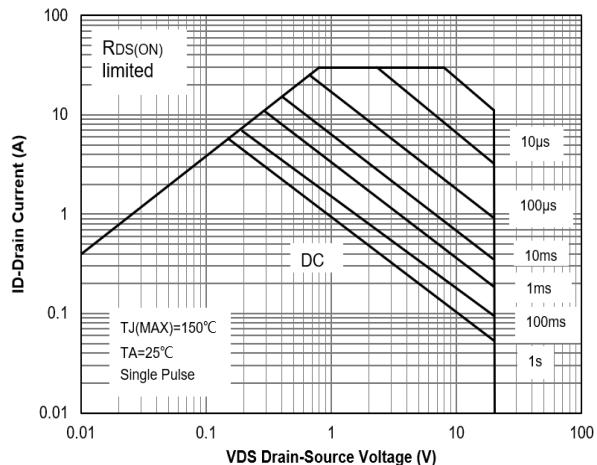


Figure 8. Safe Operation Area

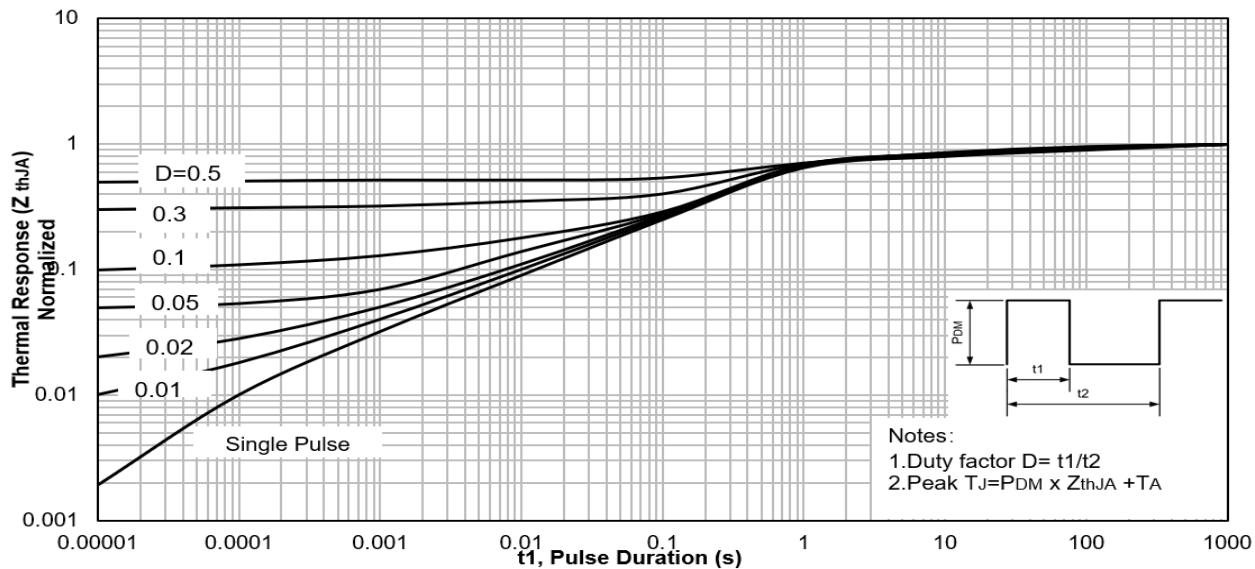


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

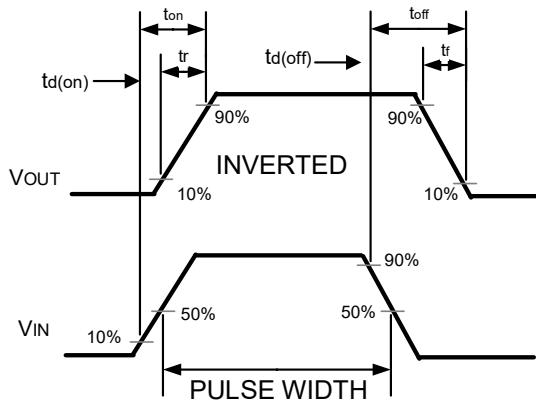
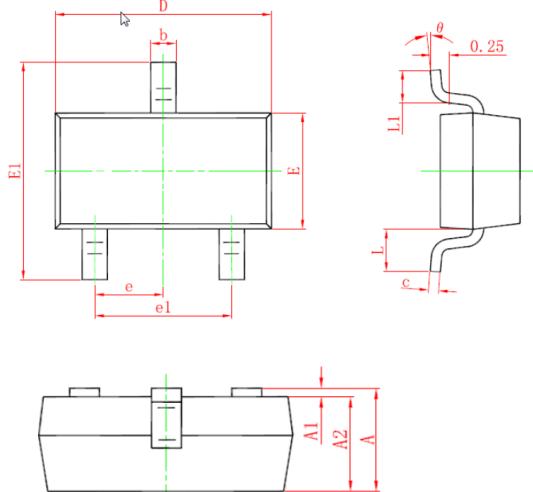


Figure 10. Switching wave

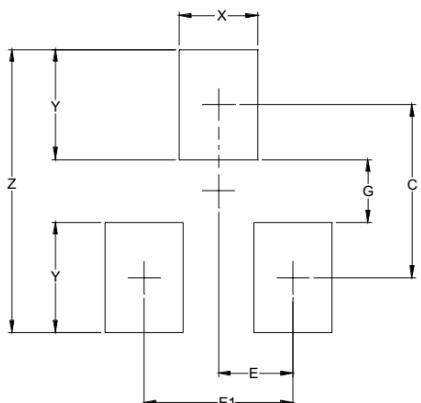
SOT-23 Package Outline Drawing

(Unit : mm)



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	--	1.15	0.035	--	0.045
A1	0.00	--	0.10	0.000	--	0.004
A2	0.90	--	1.05	0.035	--	0.041
b	0.30	--	0.50	0.012	--	0.020
c	0.08	--	0.15	0.003	--	0.006
D	2.80	--	3.00	0.110	--	0.118
E	1.20	--	1.40	0.047	--	0.055
E1	2.25	--	2.55	0.089	--	0.100
e	0.95TYP			0.037TYP		
e1	1.80	--	2.00	0.071	--	0.079
L	0.55REF			0.022REF		
L1	0.30	--	0.50	0.012	--	0.020
Θ	0°	--	8°	0°	--	8°

Suggested Land Pattern



SYM	DIMENSIONS	
	INCHES	MILLIMETERS
C	0.087	2.20
E	0.037	0.95
E1	0.075	1.90
G	0.031	0.80
X	0.039	1.00
Y	0.055	1.40
Z	0.141	3.60

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