



Description

CM1602A 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.

V_{DS}	: 20 V
I_D	: 0.9 A
$R_{DS(on)}(@V_{GS}=4.5V)$: $\leq 250m\Omega$
$R_{DS(on)}(@V_{GS}=2.5V)$: $\leq 350m\Omega$

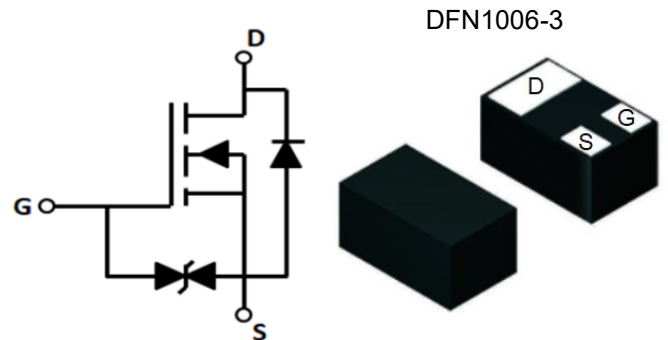
Features

- ◇ High density cell design for extremely low $R_{DS(on)}$
- ◇ Excellent on-resistance and DC current capability

Applications

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

Equivalent Circuit and Pin Configuration



ABSOLUTE MAXIMUM RATING

Ratings at 25°C ambient temperature unless otherwise specified.

PARAMETER	SYMBOL	VALUE	UNITS
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	± 10	V
Continuous drain current ⁽¹⁾	I_D	$T_A=25^\circ\text{C}, t \leq 5s$	1.0
		$T_A=25^\circ\text{C}, \text{steady state}$	0.9
		$T_A=75^\circ\text{C}, \text{steady state}$	0.69
Pulsed drain current ⁽¹⁾	I_{DM}	4.0	A
Total power dissipation ⁽²⁾	P_D	$T_A=25^\circ\text{C}, t \leq 5s$	430
		$T_A=25^\circ\text{C}, \text{steady state}$	340
Thermal resistance junction-to-ambient ⁽²⁾ , @ $t \leq 5s$	θ_{FSM}	80	A
Thermal resistance junction-to-ambient ⁽²⁾ ,		55	
Power dissipation	P_{tot}	$T_C=25^\circ\text{C}$	53.6
		$T_C=110^\circ\text{C}$	23.2
Typical Thermal Resistance, junction to case	$R_{\theta JC}$	2.8	$^\circ\text{C}/\text{W}$
Typical junction capacitance: $V_R=4.0v, f=1\text{MHz}$	C_J	300	pF
Operating Junction temperature	T_J	-55~150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55~150	$^\circ\text{C}$



ELECTRICAL CHARACTERISTICS(T_J=25°C unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE			UNITS
			Min.	Typ.	Max	
STATIC PARAMETER						
Drain-source breakdown voltage	V _{GS} =0V, I _D =250 μA	BV _{DSS}	20			V
Zero gate voltage drain current	V _{DS} =20V, V _{GS} =0V, TC=25°C	I _{DSS}			1	μA
Gate-body leakage current	V _{GS} =±10V, V _{DS} =0V	I _{GSS}			±10	μA
Gate Threshold voltage	V _{DS} =V _{GS} , I _D =250μA	V _{GS(th)}	0.35	0.75	1.1	V
Static drain-source on-resistance	V _{GS} =4.5V, I _D =0.5A	R _{DS(on)}		190	250	mΩ
	V _{GS} =2.5V, I _D =0.45A			270	350	
Diode forward voltage	I _S =0.6A, V _{GS} =0V	V _{SD}			1.2	V
Maximum body-diode continuous current		I _S			0.9	A
DYNAMIC PARAMETERS						
Input capacitance	V _{DS} =16V, V _{GS} =0V, f=1MHz	C _{iss}		26		Pf
Output capacitance		C _{oss}		9		
Reverse transfer capacitance		C _{rss}		5		
SWITCHING PARAMETERS						
Total gate charge	V _{GS} =4.5V, V _{DS} =10V, I _D =0.5A	Q _g		0.84		nC
Gate source charge		Q _{gs}		0.25		
Gate drain charge		Q _{gd}		0.10		
Turn-on delay time	V _{GS} =4.5V, V _{DD} =10V I _D =0.5A, R _{GEN} =10Ω	T _{d(on)}		2		ns
Turn-on rise time		t _r		18.8		
Turn-off delay time		t _{D (off)}		10		
Turn-off fall time		t _f		23		

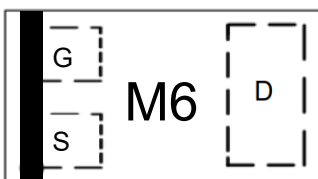
Noted:(1)Pulse Test:Pulse Width ≤ 300 μs, Duty cycle ≤ 2%.

(2)Device mounted on an FR4 PCB, single-side copper, tin-plated and mounting pad for drain 6cm².

ORDERING PACK INFORMATION

Part No.	Package	Packaging	Reel Size
CM1602A	DFN1006-3	10000/Tape/Tube	7 inch

Marking Information



Device Code = M6



RATING AND CHARACTERISTICS CURVES

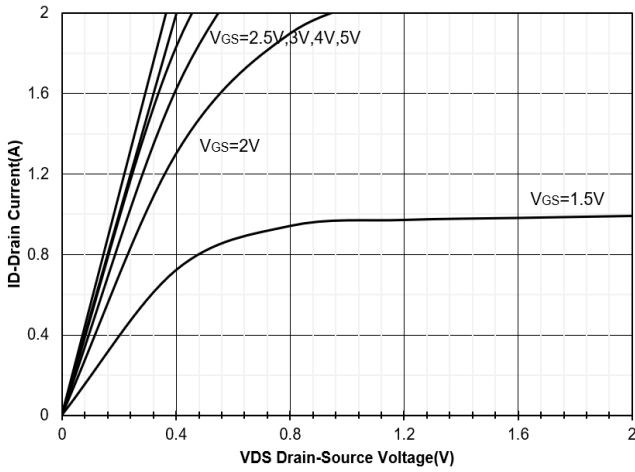


Figure 1. Output Characteristics

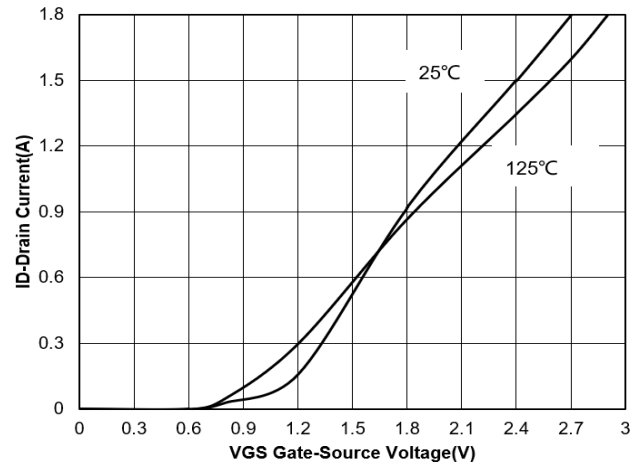


Figure 2. Transfer Characteristics

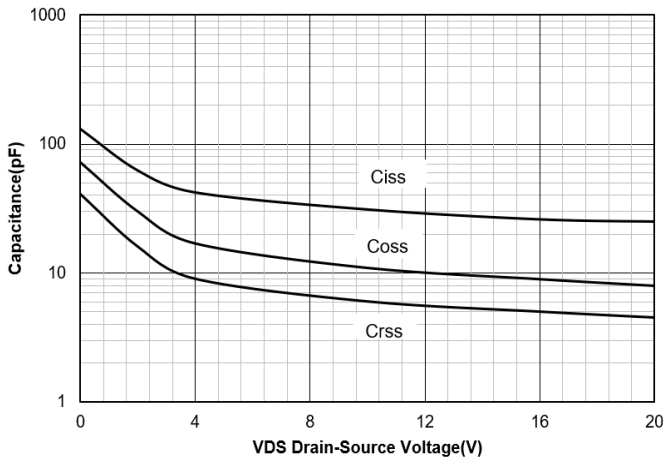


Figure 3. Capacitance Characteristics

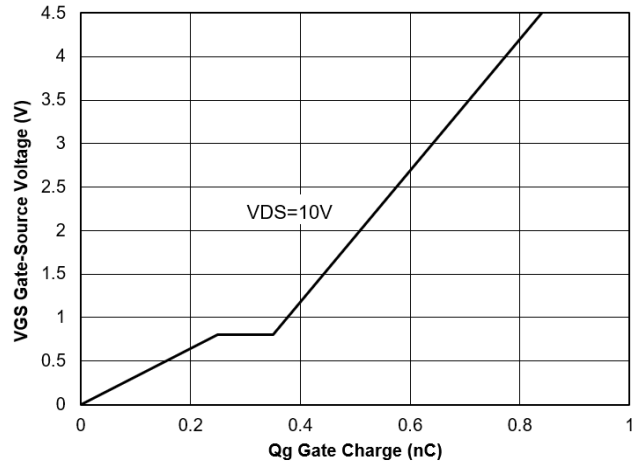


Figure 4. Gate Charge

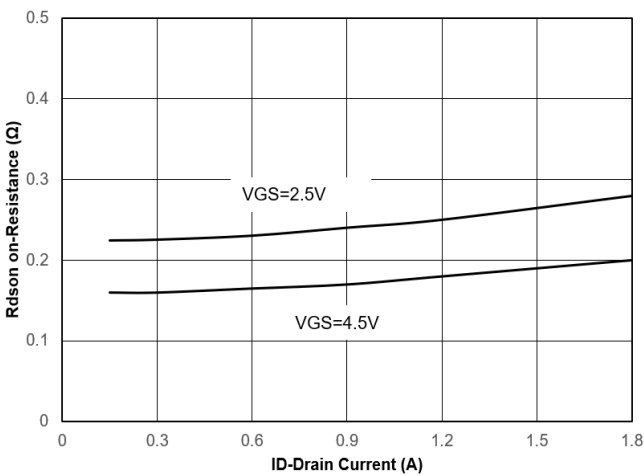


Figure 5. Drain-Source on Resistance

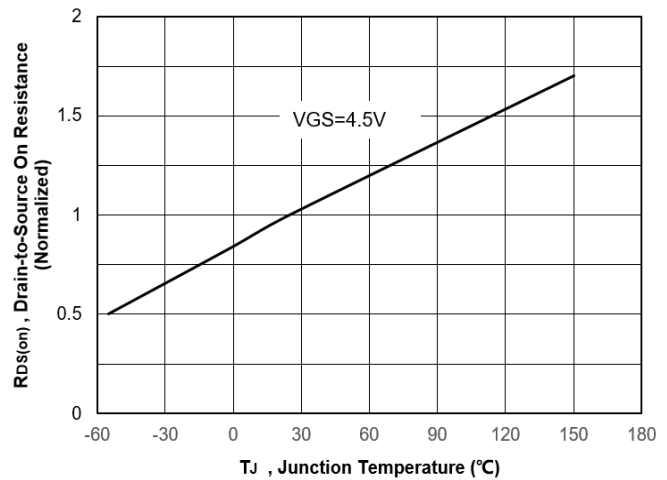


Figure 6. Normalized On-Resistance Vs. Temperature

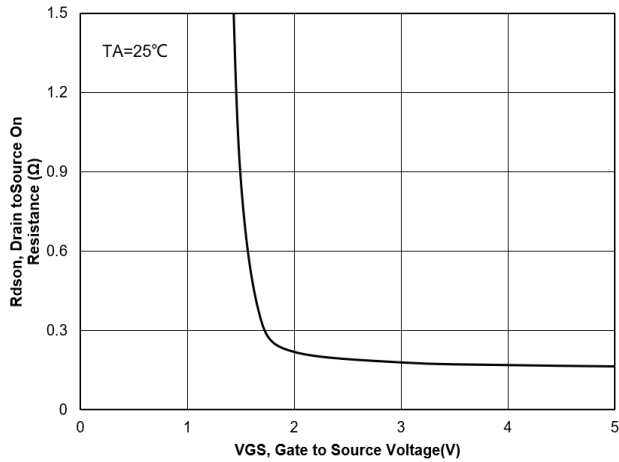


Figure 7. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

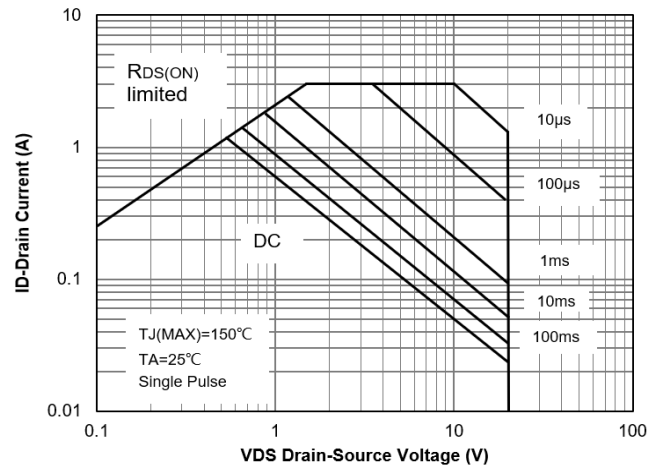


Figure 8. Safe Operation Area

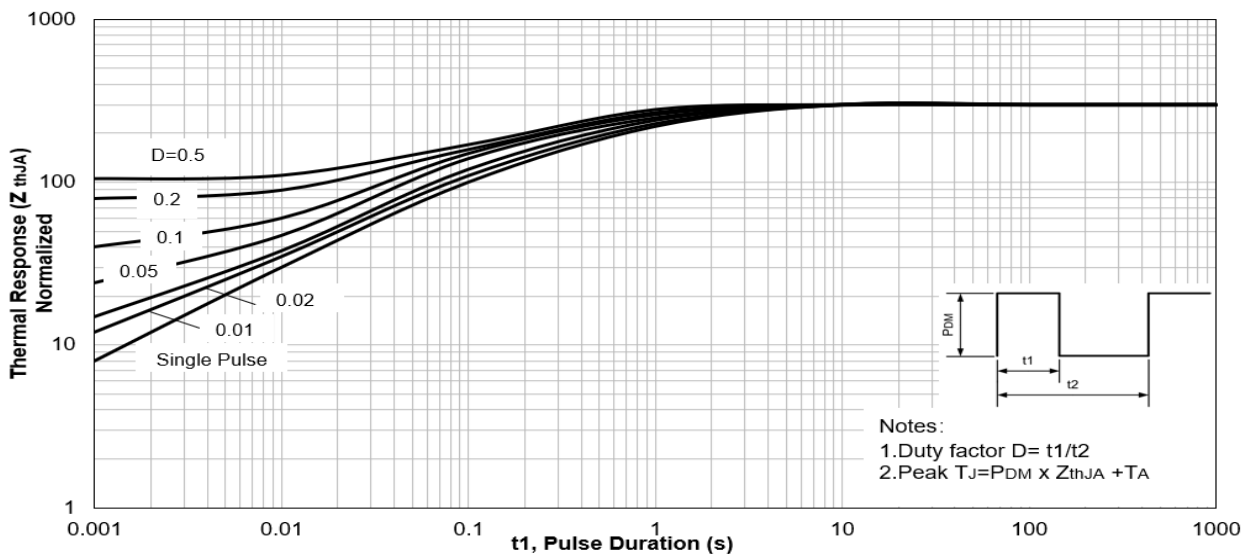


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

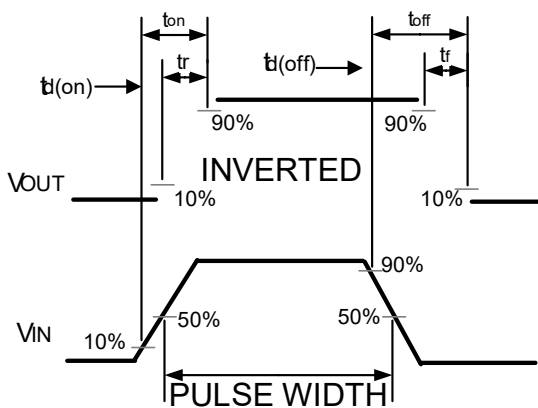
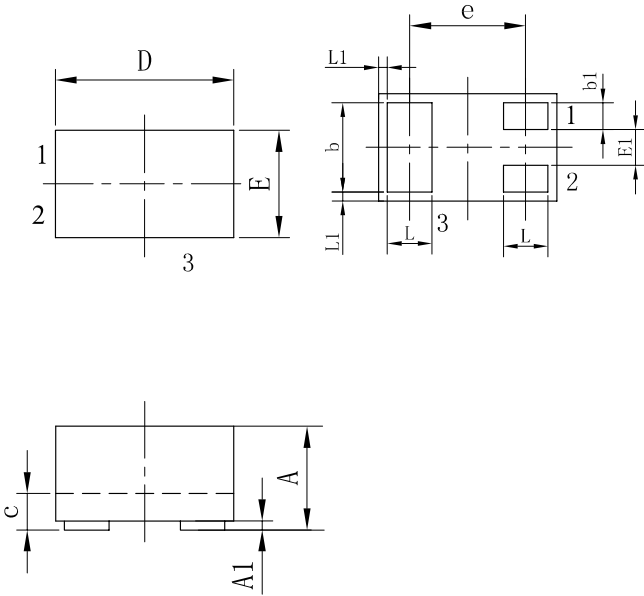


Figure 10. Switching wave



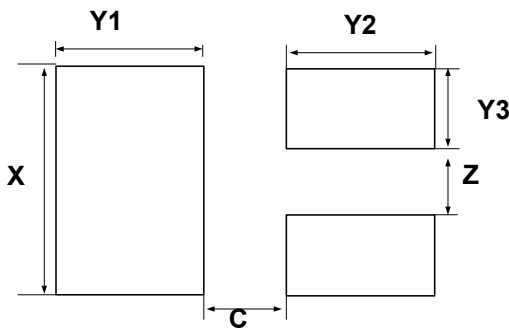
PACKAGE OUTLINE DIMENSIONS

DFN1006-3 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
E1	0.15	0.20	0.25	0.006	0.008	0.010
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05 REF			0.0002 REF		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	0.25	0.010
X	0.65	0.024
Y1	0.50	0.020
Y2	0.50	0.020
Y3	0.25	0.010
Z	0.20	0.008