

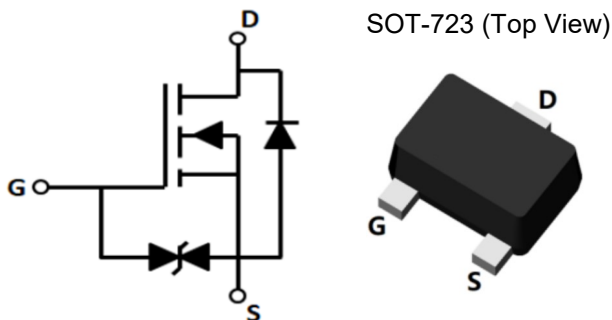
Description

CMN138KCK 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} : 60V
- I_D : 0.3A
- $R_{DS(on)}$ (@ $V_{GS}=10V$) : $< 3\Omega$
- $R_{DS(on)}$ (@ $V_{GS}=4.5V$) : $< 3.4\Omega$
- $R_{DS(on)}$ (@ $V_{GS}=2.5V$) : $< 4.5\Omega$
- High density cell design for extremely low $R_{DS(on)}$
- Excellent on-resistance and DC current capability

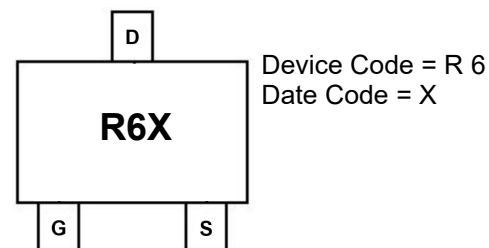
Equivalent Circuit and Pin Configuration



Applications

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

Marking Information



Ordering Information

Part Number	Packaging	Reel Size
CMN138KCK	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Maximum	Unit	
Drain-source Voltage	V_{DS}	60	V	
Gate-source Voltage	V_{GS}	± 20	V	
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$, Steady State	0.3	A
		$T_A=100^\circ\text{C}$, Steady State	0.2	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	1	A	
Total Power Dissipation @ $T_A=25^\circ\text{C}$ ⁽²⁾	Steady State	P_D	313	mW
Thermal Resistance Junction-to-Ambient ⁽²⁾	Steady State	$R_{\theta JA}$	400	$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$	

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _C =25°C			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.2	V
Static Drain-Source on-Resistance	R _{DSON}	V _{GS} =10V, I _D =0.3A		1.8	3.0	Ω
		V _{GS} =4.5V, I _D =0.2A		1.9	3.4	
		V _{GS} =2.5V, I _D =0.1A		2.5	4.5	
Diode Forward Voltage	V _{SD}	I _S =0.3A, V _{GS} =0V		0.85	1.2	V
Maximum Body-Diode Continuous Current	I _S				0.3	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		20		pF
Output Capacitance	C _{oss}			3.1		
Reverse Transfer Capacitance	C _{rss}			1.8		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =25V, I _D =0.3A		3.2		nC
Gate Source Charge	Q _{gs}			0.2		
Gate Drain Charge	Q _{gd}			0.2		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =25V, I _D =0.3A, R _{GEN} =3Ω		4.4		ns
Turn-on Rise Time	t _r			2.4		
Turn-off Delay Time	t _{D(off)}			10.2		
Turn-off Fall Time	t _f			3.6		

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

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

Typical Performance Characteristics

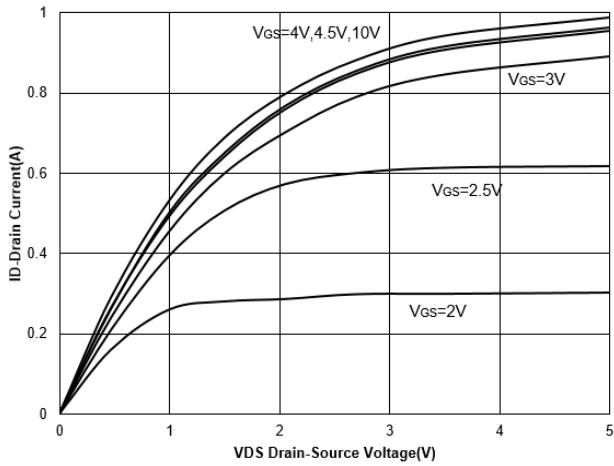


Figure 1. Output Characteristics

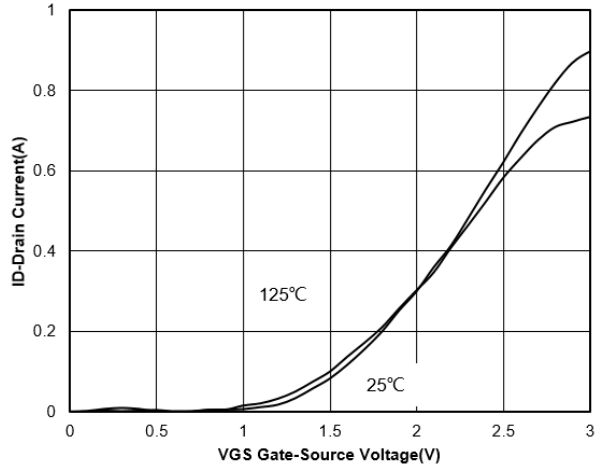


Figure 2. Transfer Characteristics

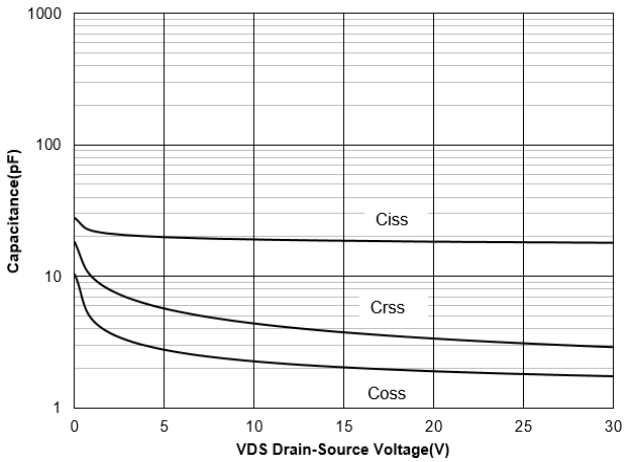


Figure 3. Capacitance Characteristics

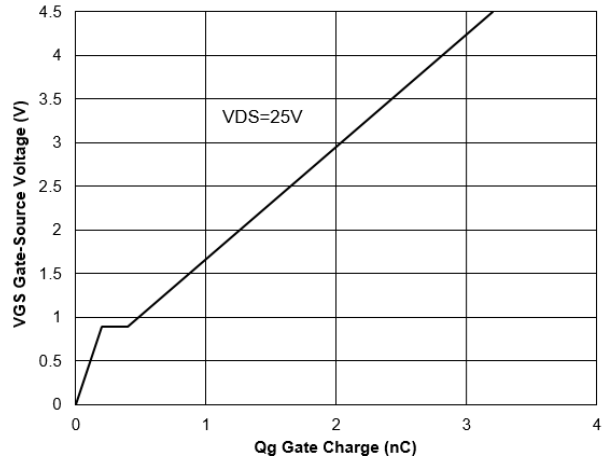


Figure 4. Gate Charge

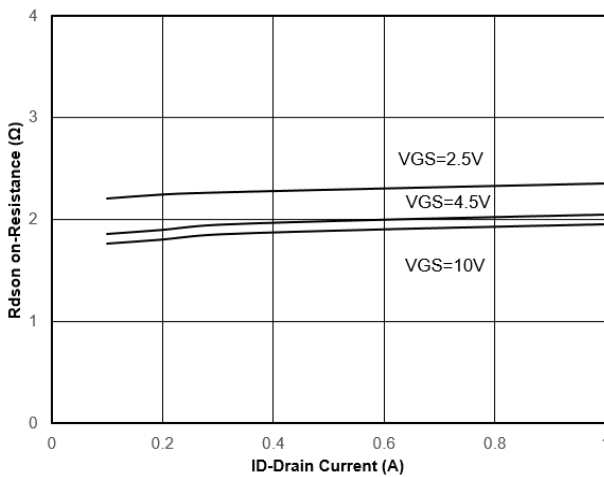


Figure 5. Drain-Source on Resistance

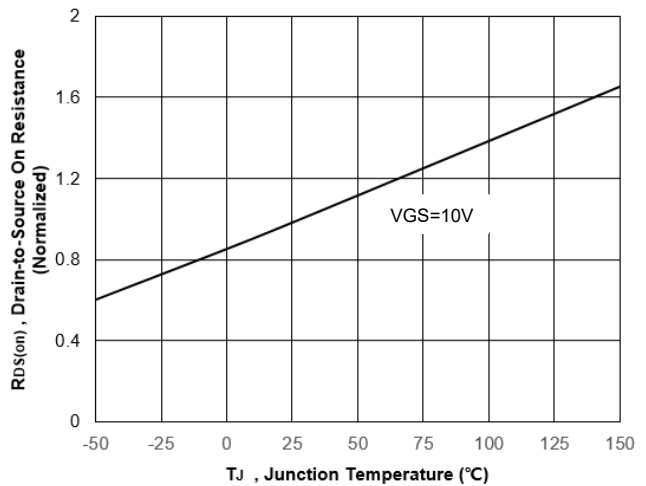


Figure 6. Normalized On-Resistance

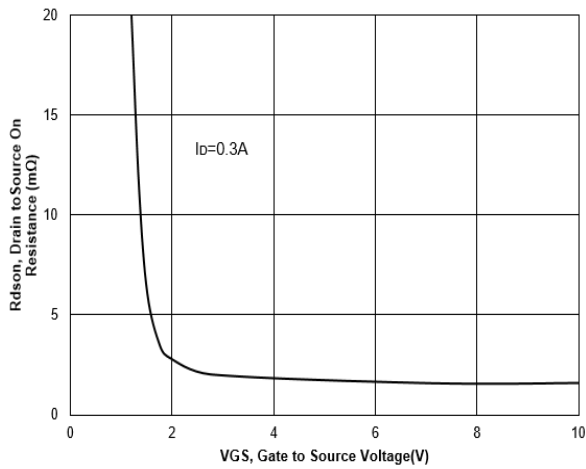


Figure 6. Typical Drain to Source ON Resistance VS Gate Voltage and Drain Current

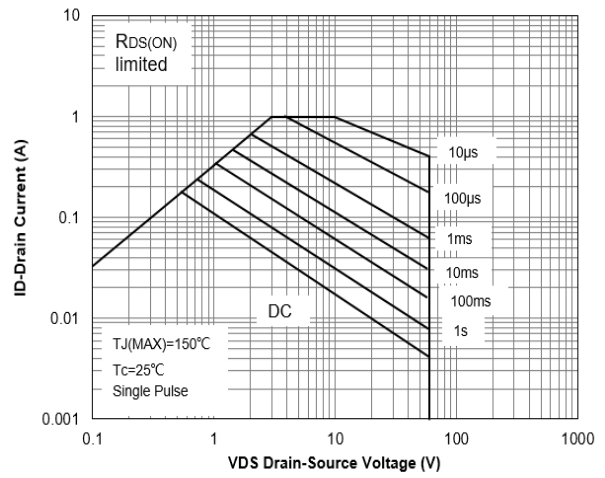


Figure 7. Safe Operation Area

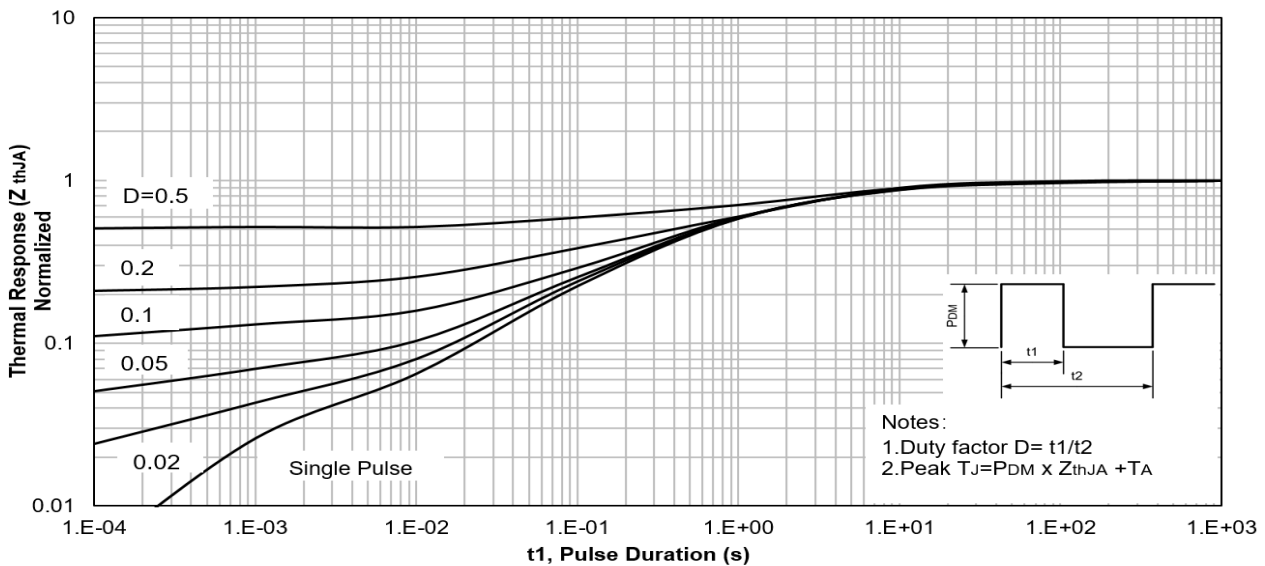


Figure 8. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

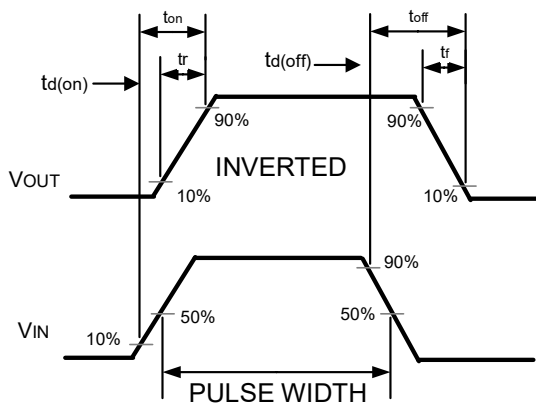
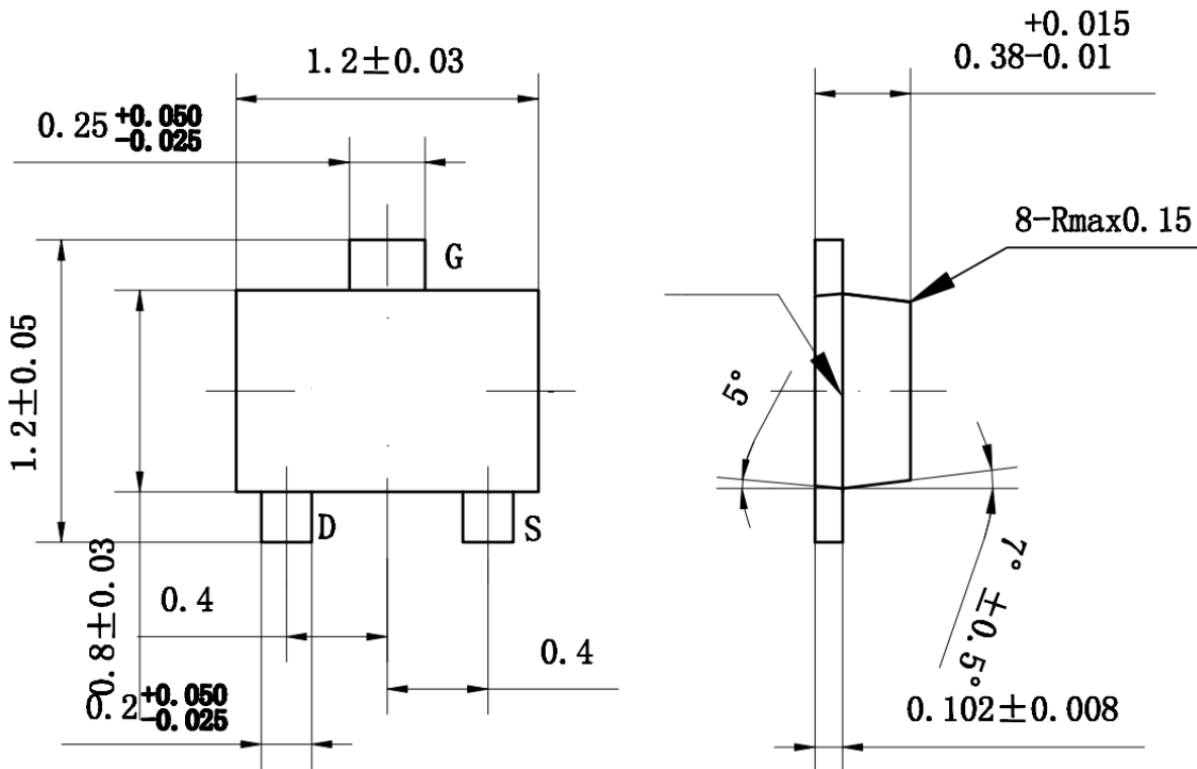


Figure 9. Switching wave

SOT-723 Package Outline Drawing



Contact Information

Applied Power Microelectronics Inc.
 Website: <http://www.appliedpowermicro.com>
 Email: sales@appliedpowermicro.com
 Phone: +86 (0519) 8399 3606

Applied Power Microelectronics Inc. (APM) reserves the right to make changes to the product specification and data in this document without notice. APM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does APM assume any liability arising from the application or use of any products or circuits, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages.