N Channel MOSFET

multicomp PRO

RoHS Compliant

Features

- $V_{DS(V)}$ = 80V
- I_D = 23A
- $R_{DS(on)}$ (at V_{GS} = 10V) < 34mΩ
- Packaging-PDFN5x6-8

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	+20	
Continuous Drain Current	T_C = 25°C	I_D	23	A
	T_C = 100°C		15	
Pulsed Drain Current (Note 1)		I_{DM}	92	
Power Dissipation		P_D	32	W
Single Pulse Avalanche Energy (Note 2)		E_{AS}	20	mJ
Thermal Resistance.Junction- to-Ambient (Note 3)		$R_{\theta JA}$	50	°C/W
Thermal Resistance.Junction- to-Case (Note 3)		$R_{\theta JC}$	3.9	
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. E_{AS} condition : I_D=12A, R_g=25Ω
3. Surface Mounted on FR4 Board, t ≤ 10 sec.

Electrical Characteristics (T_C = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA, V_{GS}=0V	80			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-80V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2		3.5	V
Static Drain-Source On-Resistance	$R_{DS(On)}$	V_{GS}=-10V, I_D=12A			34	mΩ
		V_{GS}=-6V, I_D=6A			66	
Forward Transconductance	g_{FS}	V_{DS}=-10V, I_D=-12A	8			S
Dynamic Characteristics (Note 1)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-40V, f=1MHz		564		pF
Output Capacitance	C_{oss}			156		
Reverse Transfer Capacitance	C_{RSS}			7		

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Resistance	Rg	f = 1 MHz		1		Ω
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 40 V, I_D = 12A, R_G = 1.6Ω		8		nS
Turn-On Rise Time	t_r			3		
Turn-Off DelayTime	$t_{d(off)}$			11		
Turn-Off Fall Time	t_f			2		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DD}=-40V, I_D=-12A		6.8		nC
Gate Source Charge	Q_{gs}			2.4		
Gate Drain Charge	Q_{gd}			1.5		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	I_F = 12A, dI/dt = 100 A/μs, T_J = 25°C		43		nS
Body Diode Reverse Recovery Charge	Q_{rr}			41		nC
Maximum Body-Diode Continuous Current	I_S				23	
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 12 A		0.9	1.2	

Notes:
1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Typical Electrical and Thermal Characteristics

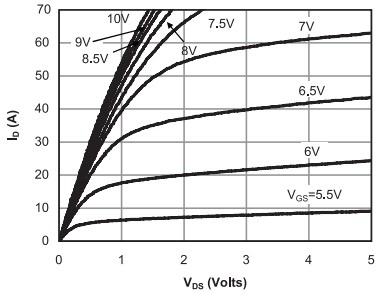


Fig 1: On-Region Characteristics

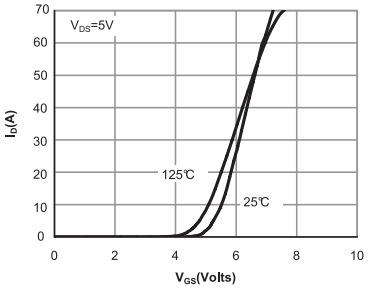


Figure 2: Transfer Characteristics

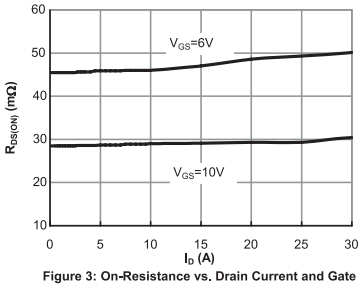


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

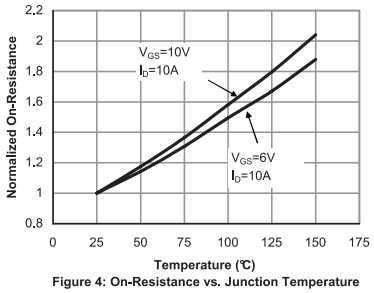


Figure 4: On-Resistance vs. Junction Temperature

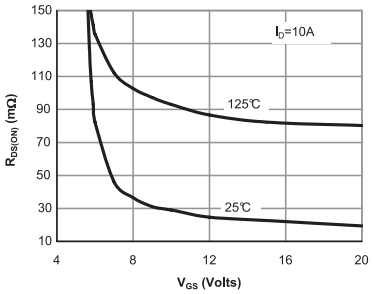


Figure 5: On-Resistance vs. Gate-Source Voltage

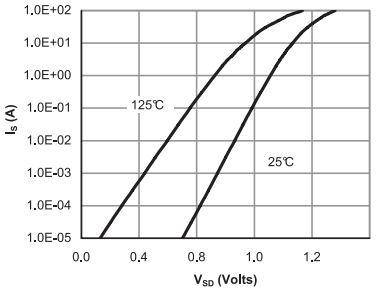


Figure 6: Body-Diode Characteristics

Typical Characterisitics

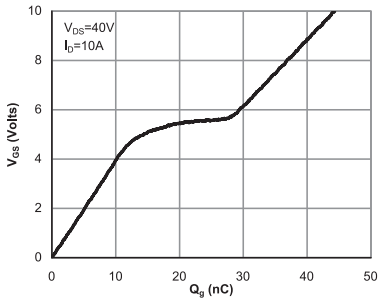


Figure 7: Gate-Charge Characteristics

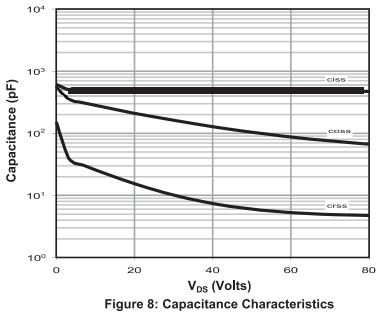


Figure 8: Capacitance Characteristics

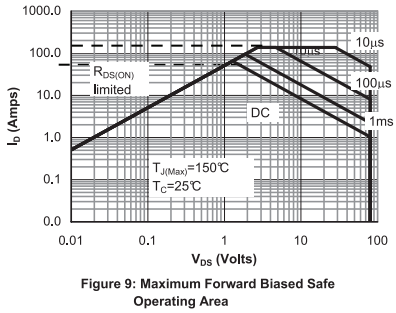


Figure 9: Maximum Forward Biased Safe Operating Area

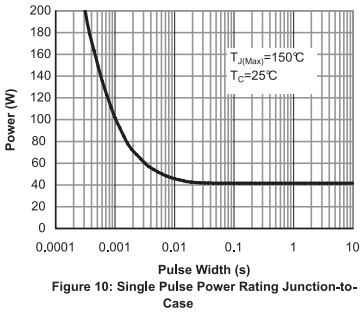


Figure 10: Single Pulse Power Rating Junction-to-Case

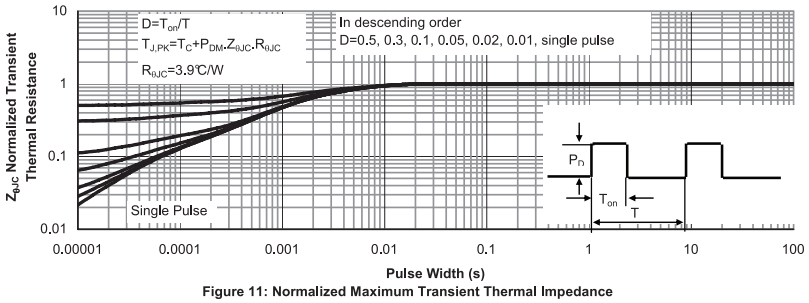
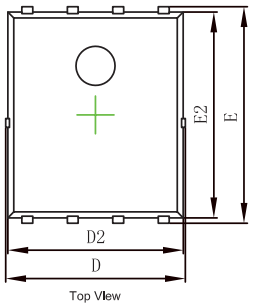
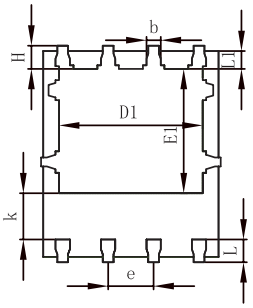


Figure 11: Normalized Maximum Transient Thermal Impedance

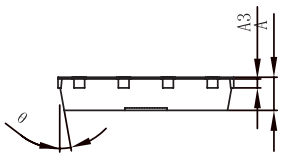
Package Outline Dimensions



Top View



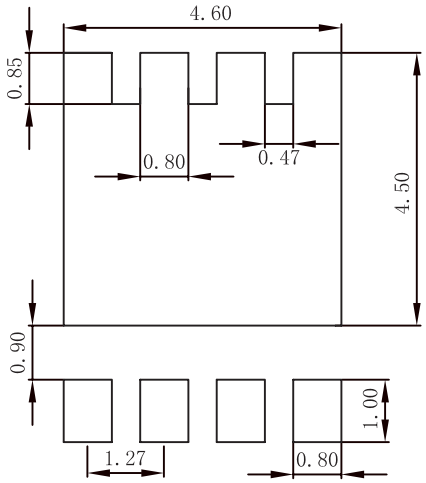
Bottom View



Side View

Dimensions : Millimetres

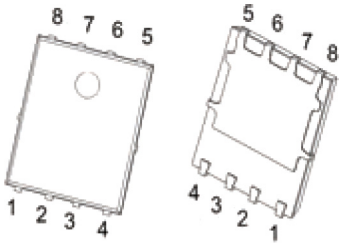
Suggested Pad Layou

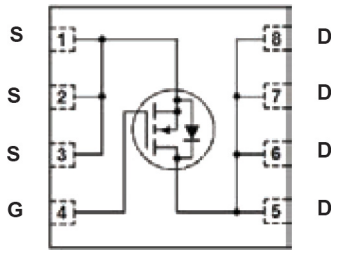


Notes

1.Controlling dimension: in millimeters.
2.General tolerance: ±0.05mm
3.The pad layout is for reference purposes only.

Diagram





Part Number Table

Description	Part Number
N Channel MOSFET, 23A, 80V	2KK5098DFN

Dimensions : Millimetres