

RoHS
Compliant



Features

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

Absolute Maximum Ratings ($T_J = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	+20	
Continuous Drain Current	I_D	$T_C = 25^\circ C$ 23	A
		$T_C = 100^\circ C$ 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	$^\circ C/W$
Thermal Resistance.Junction- to-Case (Note 3)	$R_{\theta JC}$	3.9	
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : $I_D=12A$, $R_{\theta}=25\Omega$
3. Surface Mounted on FR4 Board, $t \leq 10$ sec.

Electrical Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu A$, $V_{GS}=0V$	80			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-80V$, $V_{GS}=0V$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm 20V$			± 100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	2		3.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$, $I_D=12A$			34	m Ω
		$V_{GS}=-6V$, $I_D=6A$			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		

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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Resistance	R _g	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

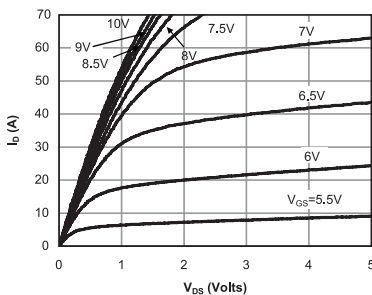


Fig 1: On-Region Characteristics

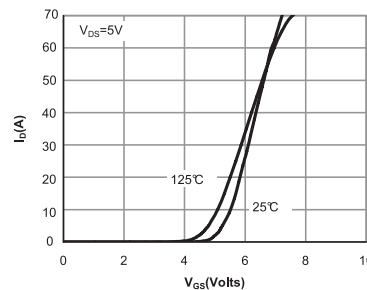


Figure 2: Transfer Characteristics

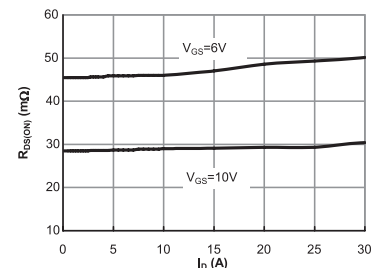


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

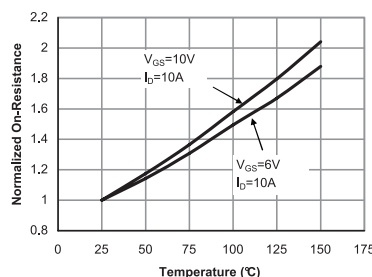


Figure 4: On-Resistance vs. Junction Temperature

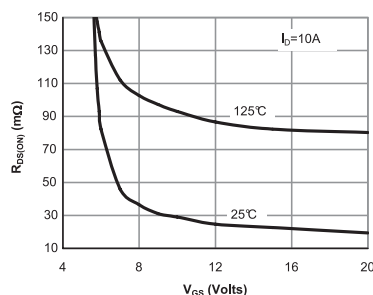


Figure 5: On-Resistance vs. Gate-Source Voltage

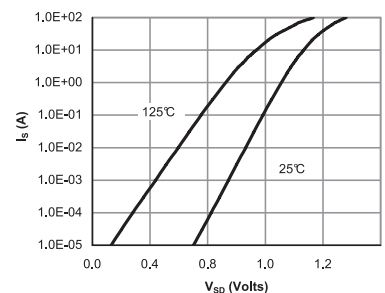
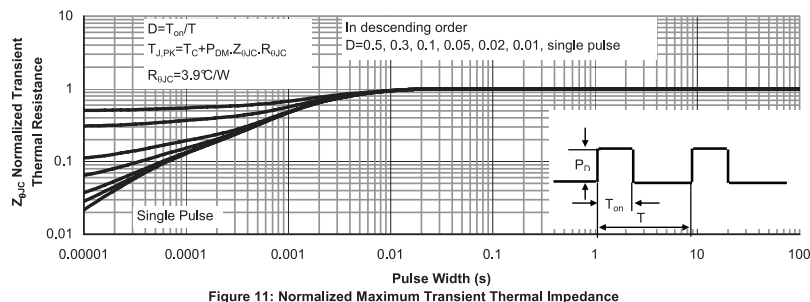
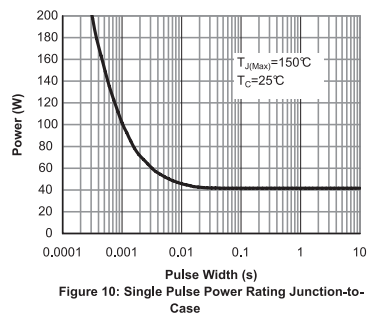
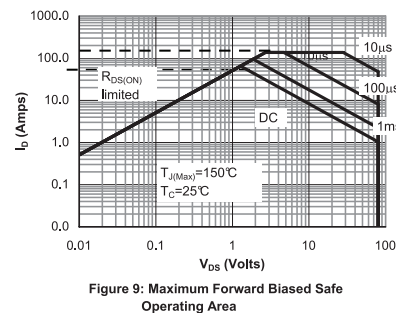
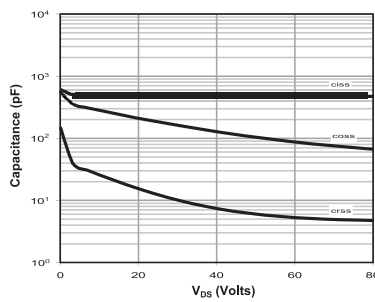
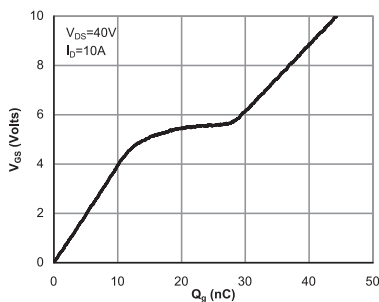
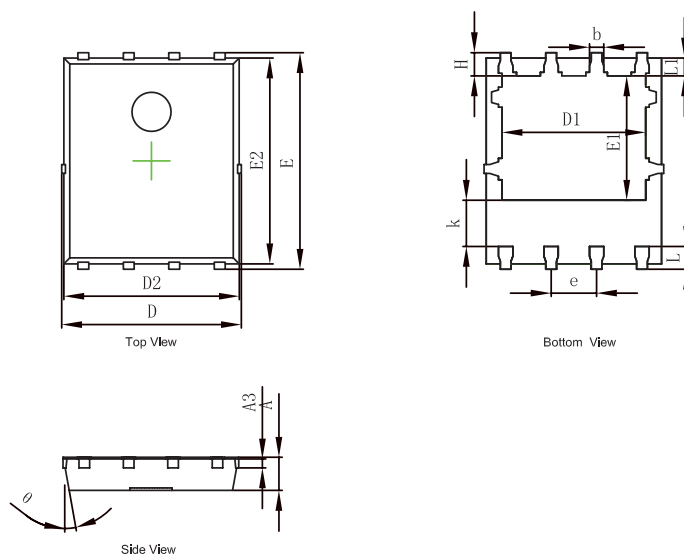


Figure 6: Body-Diode Characteristics

Typical Characteristics



Package Outline Dimensions

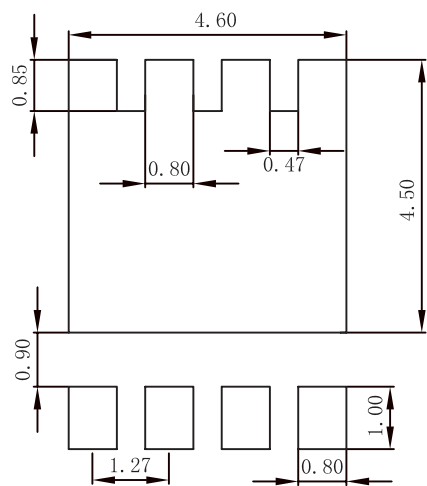


Dimensions : Millimetres

N Channel MOSFET

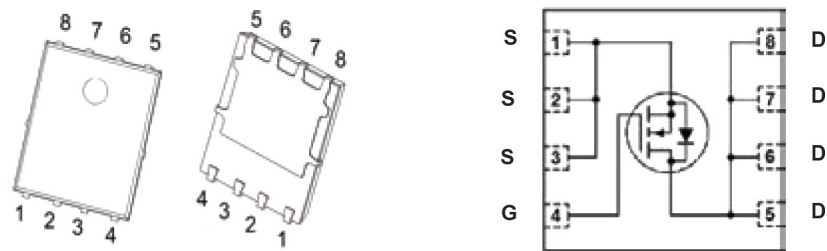
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Suggested Pad Layout



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

Diagram



Dimensions : Millimetres

Part Number Table

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

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