N Channel MOSFET

multicomp PRO

RoHS Compliant

Features

- $V_{DS(V)}$ = 60V
- $I_{D\ MAX}$ = 80A
- $R_{DS(on)}$ < 7.5mΩ @ V_{GS}=10V
- $R_{DS(on)}$ < 9.5mΩ @ V_{GS}=4.5V
- Packaging-PDFN5 × 6-8

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	+20	
Continuous Drain Current	T_C = 25°C	I_D	80	A
	T_C = 100°C		51	
	T_A = 25°C		10	
	T_A = 100°C		8	
Diode Continuous Forward Current	T_C = 25°C	I_S	25	
Avalanche Current, Single pulse (L=0.5mH) (Note 2)		I_{AS}	20	
Avalanche Energy, Single pulse (L=0.5mH) (Note 2)		E_{AS}	100	mJ
Power Dissipation	T_C = 25°C	P_D	52	W
	T_C = 100°C		20.8	
	T_A = 25°C		2	
	T_A = 100°C		1.3	
Thermal Resistance. Junction- to-Case	Steady State	$R_{\theta JC}$	2.4	°C/W
Thermal Resistance. Junction- to-Ambient (Note 3)	t ≤ 10s	$R_{\theta JA}$	25	
Thermal Resistance. Junction- to-Case (Note 3)	Steady State		60	
Junction Temperature		T_J	1450	°C
Storage Temperature Range		T_{stg}	-55 to 150	

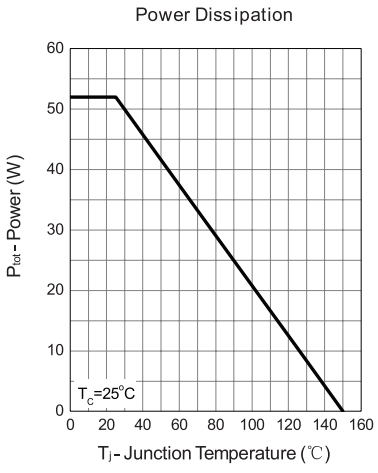
Notes:
1. Pulse width limited by max. junction temperature.
2. UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature Tj=25°C).
3. Surface Mounted on 1in^2 pad area.

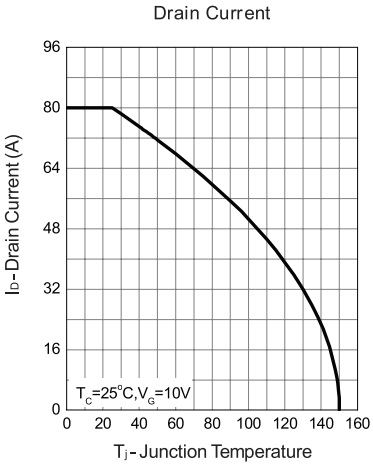
Electrical Characteristics (T_A = 25°C unless otherwise specified)

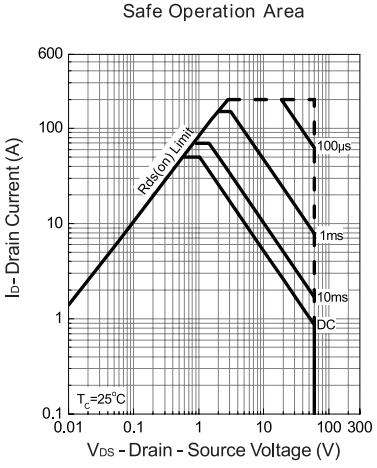
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA, V_{GS}=0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-48V, V_{GS}=0V			1	μA
		V_{DS}=-48V, V_{GS}=0V, T_J = 85°C			30	
Gate to Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.1		2.1	V
Static Drain-Source On-Resistance (Note 4)	$R_{DS(On)}$	V_{GS}=10V, I_D=25A			7.5	mΩ
		V_{GS}=-4.5V, I_D=6A			9.5	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz		2500		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{RSS}			1.5		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1		Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DD}=30V, I_D=25A		45		nC
Gate Source Charge	Q_{gs}			9		
Gate Drain Charge	Q_{gd}			8.5		
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 30V, R_L = 30Ω, I_{DS}=1A I_{GEN} = 10A, R_G = 6Ω		20		nS
Turn-On Rise Time	t_r			9		
Turn-Off DelayTime	$t_{d(off)}$			55		
Turn-Off Fall Time	t_f			20		
Body Diode Reverse Recovery Time	t_{rr}	I_F = 25A, dI/dt = 100 A/μs		28		nS
Body Diode Reverse Recovery Charge	Q_{rr}			30		nC
Diode Forward Voltage	V_{SD}	V_{SD} = 25A, V_{GS} = 0V			13	V

Notes 4: Pulse test ; pulse width≤300μs, duty cycle≤2%.

Typical Characterisitics

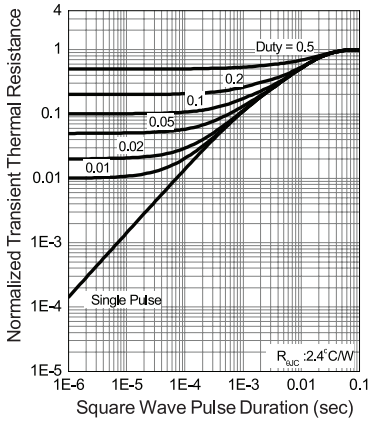




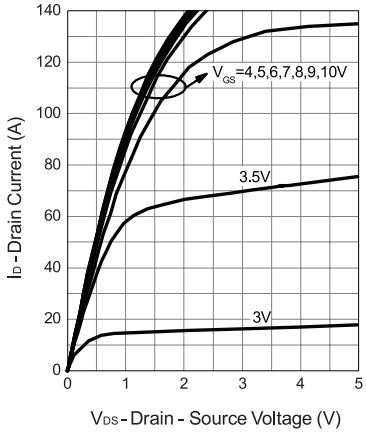


Typical Characterisitics

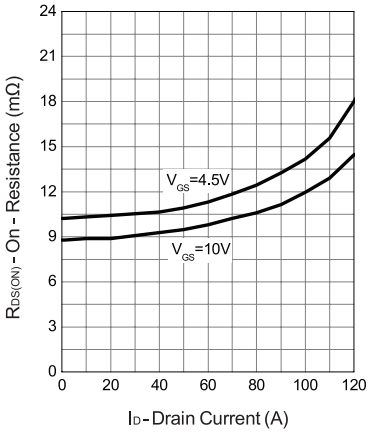
Thermal Transient Impedance



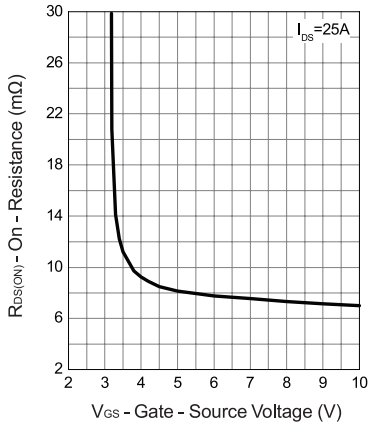
Output Characteristics



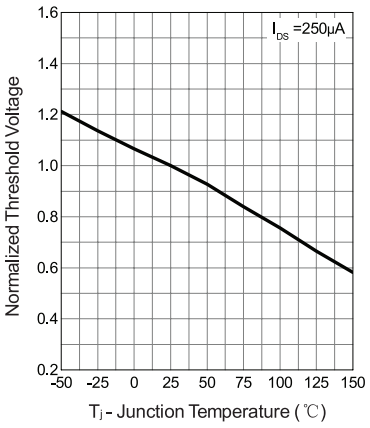
Drain-Source On Resistance



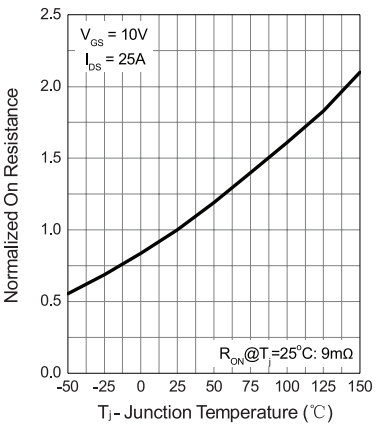
Gate-Source On Resistance



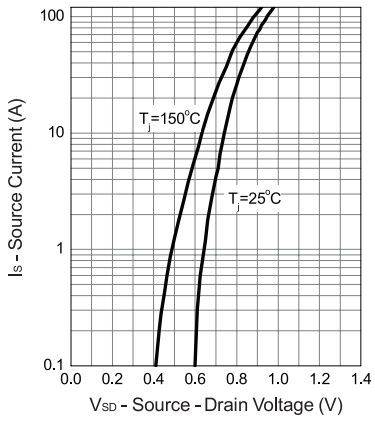
Gate Threshold Voltage



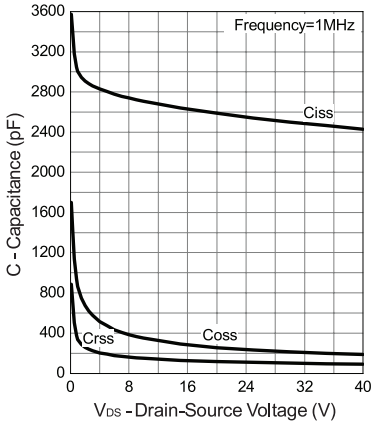
Drain-Source On Resistance



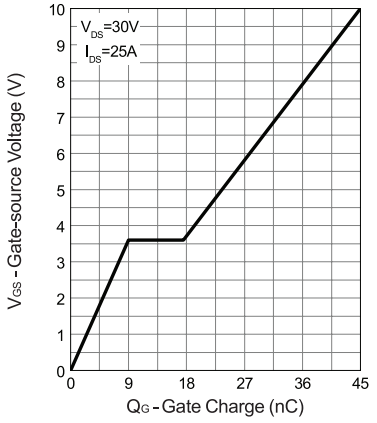
Source-Drain Diode Forward



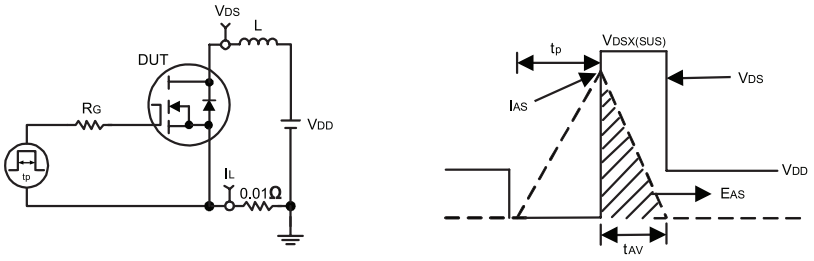
Capacitance



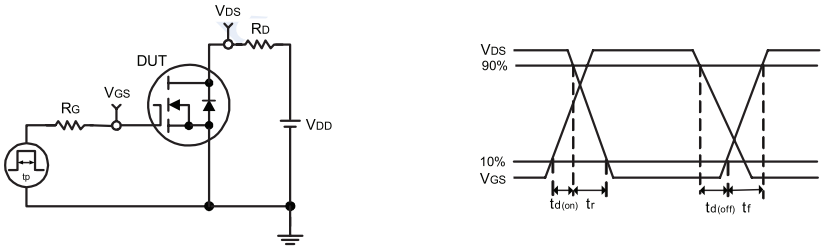
Gate Charge



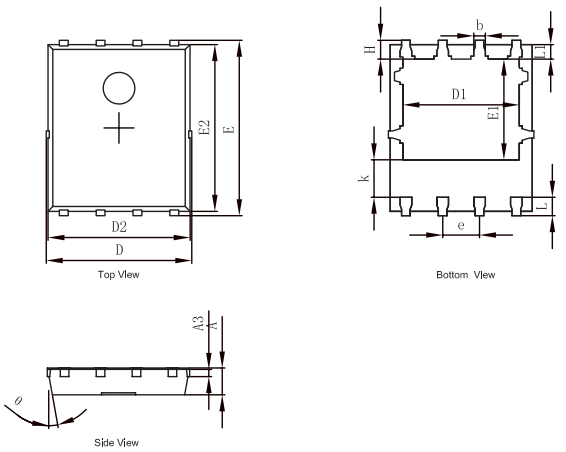
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

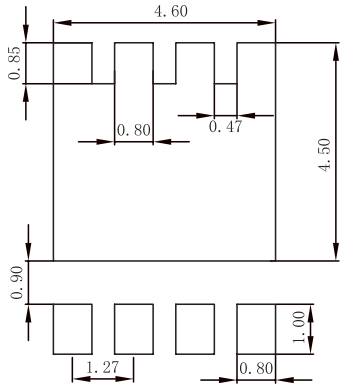


Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

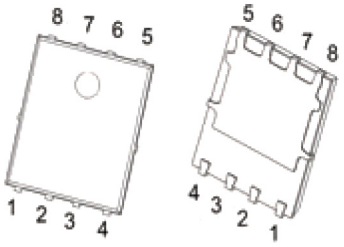
Suggested Pad Layou

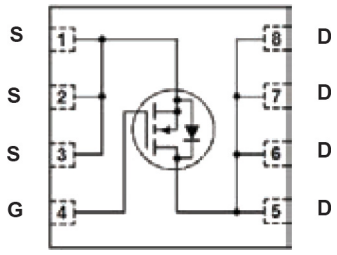


Notes

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, 80A, 60V	2KK5115DFN

Dimensions : Millimetres