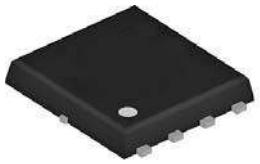
30V N-Ch Power MOSFET

Features:

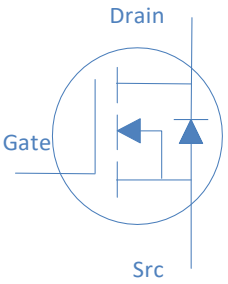
- ◇ High Speed Power Switching, Logic Level
- ◇ Enhanced Avalanche Ruggedness
- ◇ 100% UIS Tested, 100% Rg Tested
- ◇ Lead Free, Halogen Free

DFN5x6



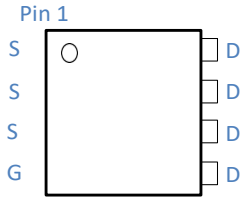
Application

- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Inductrial



V_{DS}		30	V
$R_{DS(on),typ}$	V_{GS}=10V	2.5	mΩ
$I_{D\ (Sillicon\ Limited)}$		75	A

Part Number	Package	Marking
KTN030N03	DFN5x6	TN030N03



Absolute Maximum Ratings at T_j=25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25℃	75	A
		T_C=100℃	45	
Drain to Source Voltage	V_{DS}	-	30	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	160	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	168	mJ
Power Dissipation	P_D	T_C=25℃	50	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	2.5	℃/W

Electrical Characteristics at T_j=25℃ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1	1.5	3	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=24V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=20V, T_j=125℃	-	-	25	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=30A	-	2.5	3	mΩ
		V_{GS}=4.5V, I_D=24A	-	3	4	
Transconductance	g_{fs}	V_{DS}=5V, I_D=24A	-	25	-	S
Gate Resistance	R_G	V_{GS}=15mV, V_{DS} =0V, f=1MHz	-	1.6	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz	-	2979	-	pF
Output Capacitance	C_{oss}		-	381	-	
Reverse Transfer Capacitance	C_{rss}		-	224	-	
Total Gate Charge	Q_g(10V)	V_{DD}=15V, I_D=30A, V_{GS}=10V	-	44.6	-	nC
	Q_g(4.5V)		-	21.2	-	
Gate to Source Charge	Q_{gs}		-	8.3	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	6.5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=15V, I_D=24A, V_{GS}=10V, R_G=2.7Ω,	-	15	-	ns
Rise time	t_r		-	10	-	
Turn off Delay Time	$t_{d(off)}$		-	50	-	
Fall Time	t_f		-	10	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=75A	-		1.2	V
Reverse Recovery Time	t_{rr}	I_F=75A, dI_F/dt=100A/μs	-	32	-	ns
Reverse Recovery Charge	Q_{rr}		-	12	-	nC

Fig 1. Typical Output Characteristics

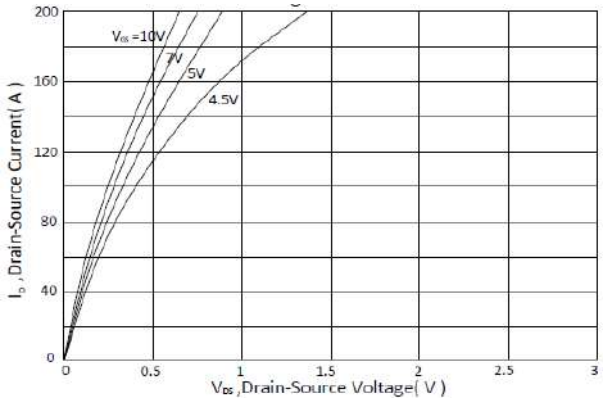


Figure 2. On-Resistance vs. Gate-Source Voltage

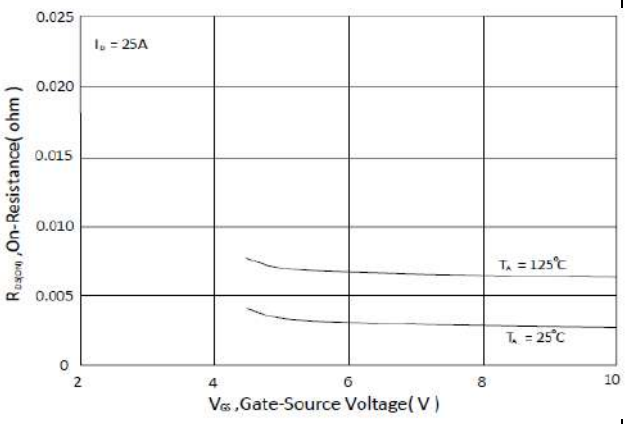


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

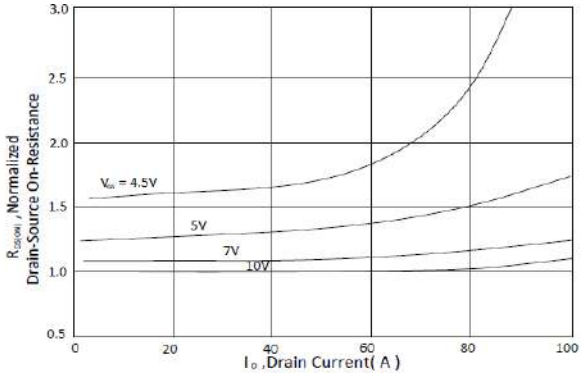


Figure 4. Normalized On-Resistance vs. Junction Temperature

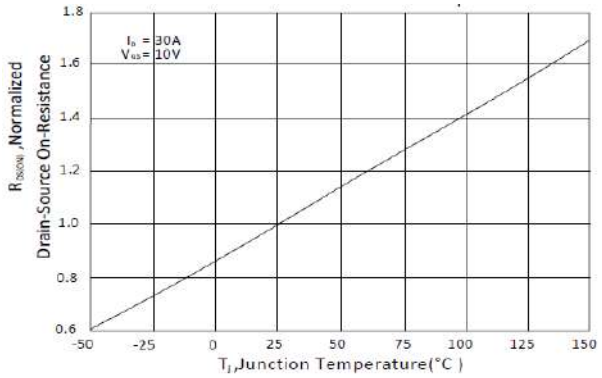


Figure 5. Typical Transfer Characteristics

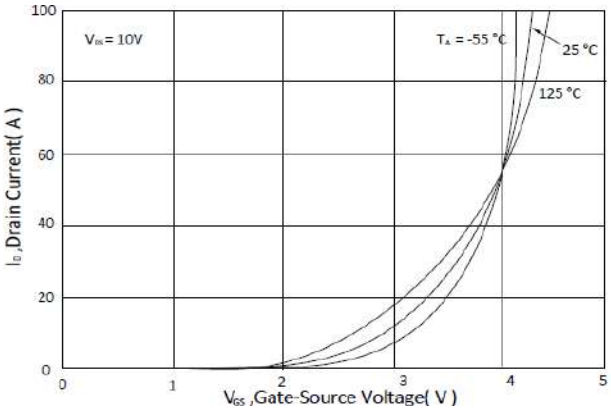


Figure 6. Typical Source-Drain Diode Forward Voltage

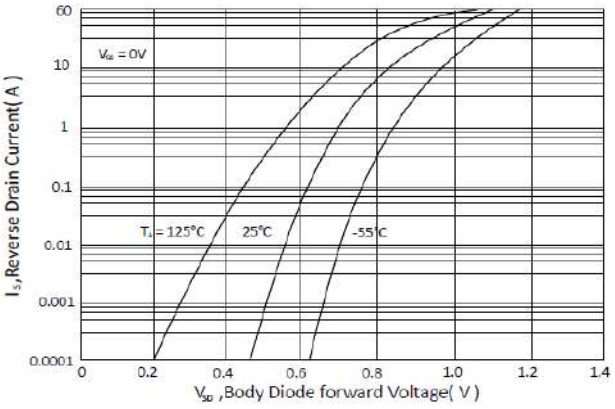


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

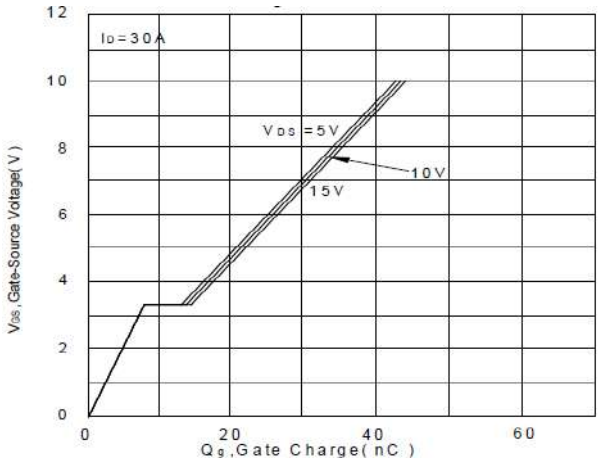


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

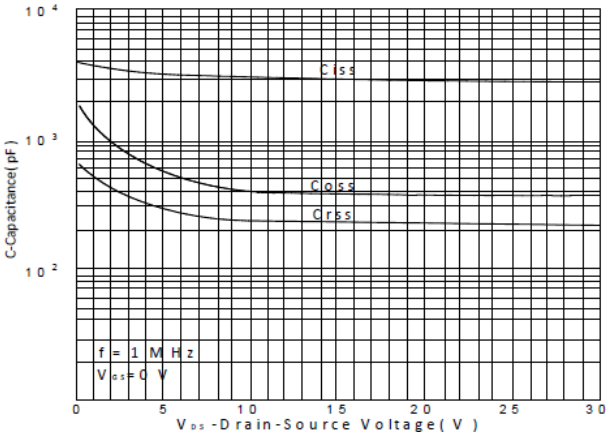


Figure 9. Maximum Safe Operating Area

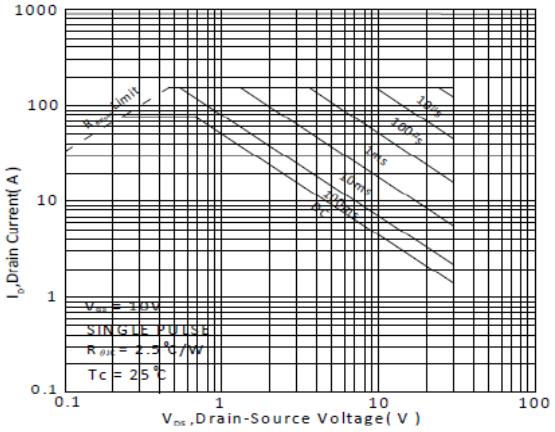


Figure 10. Maximun Drain Current vs. Case Temperature

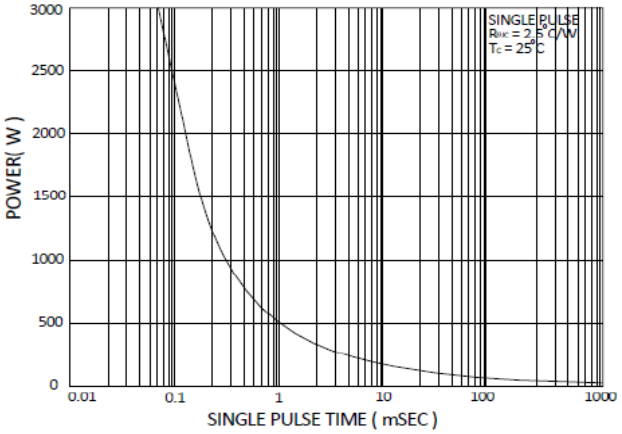
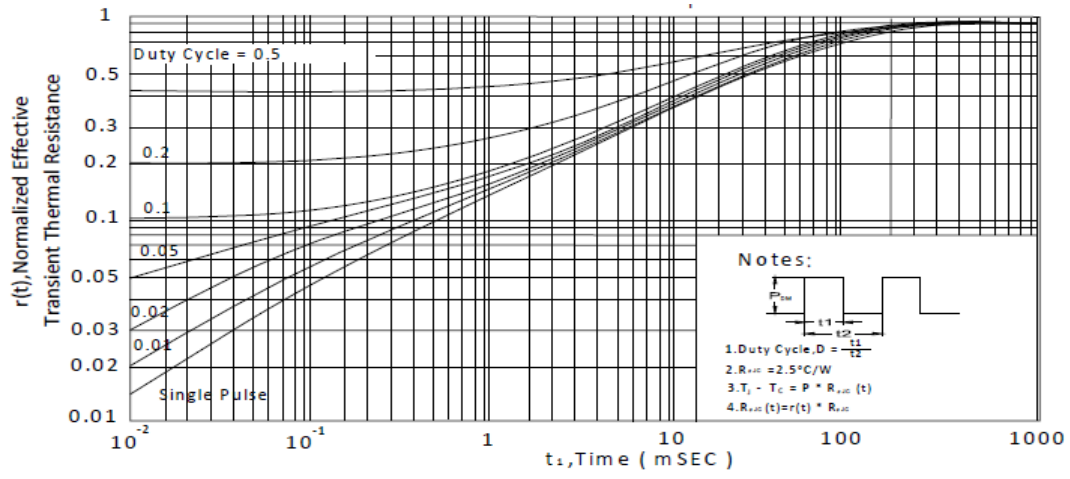
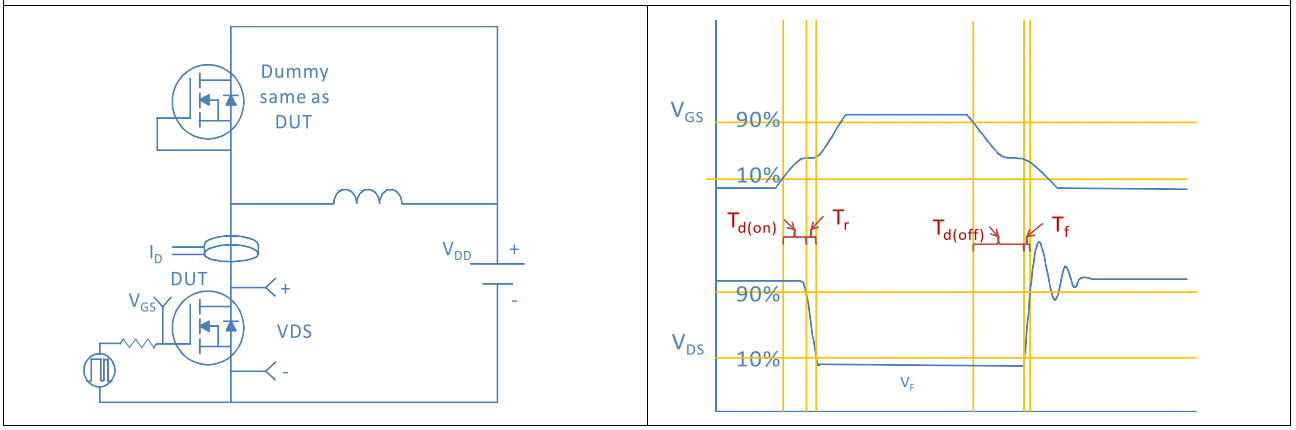


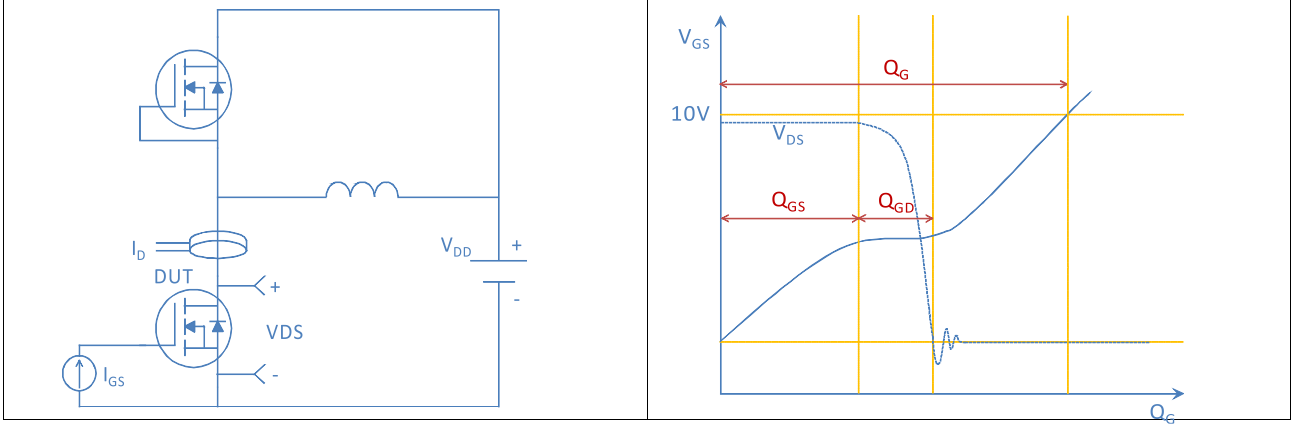
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



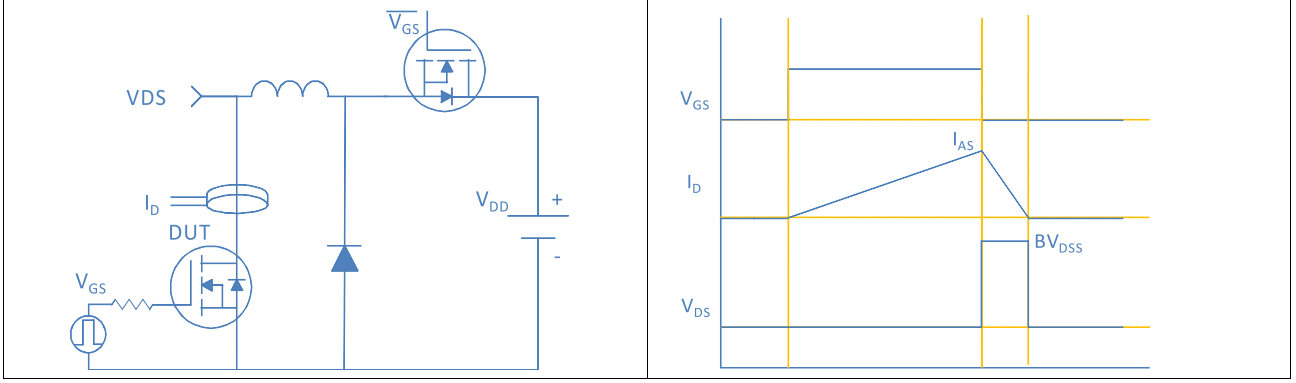
Inductive switching Test



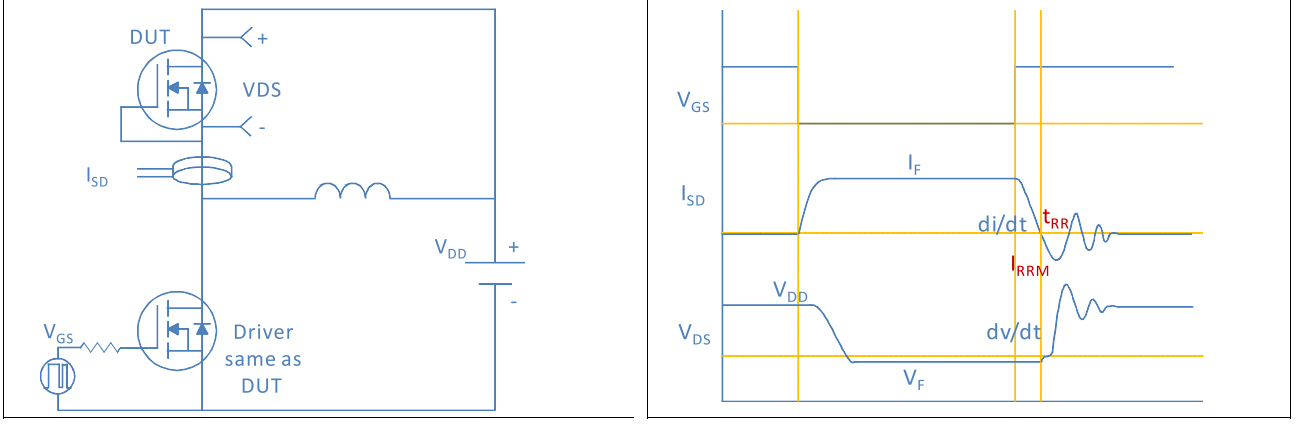
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

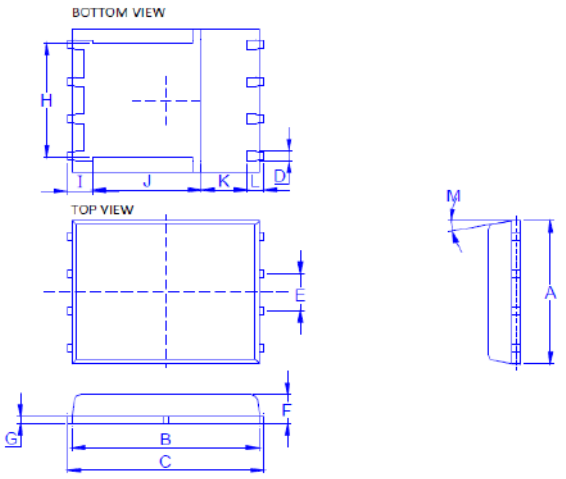


Diode Recovery Test



Package Outline

DFN5*6, 8leads



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K	L	M
Min.	4.80	5.50	5.90	0.3		0.85	0.15	3.67	0.41	3.00	0.94	0.45	0°
Typ.					1.27								
Max.	5.30	5.90	6.15	0.51		1.20	0.30	4.54	0.85	3.92	1.7	0.71	12°