Omnirel

OM60N10NK (T_C = 25°C unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			60	A	(repetitive or non-repetitive,T_J = 25°C)
E_{AS}	Single Pulse Avalanche Energy			720	mJ	(starting T_J = 25°C, $I_D = I_{AR}$, V_{DD} = 25 V)
E_{AR}	Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{jmax}, d < 1%)
I_{AR}	Avalanche Current			37	A	(repetitive or non-repetitive, T_J = 100°C)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	100			V	I_D = 250 µA, V_{GS} = 0
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)			250 1000	µA µA	V_{DS} = Max. Rat. V_{DS} = Max. Rat. x 0.8, T_C = 125°C
I_{GSS}	Gate-Body Leakage Current (V_{DS} = 0)			±100	nA	V_{GS} = ±20 V
Electrical Characteristics - ON*						
$V_{GS(th)}$	Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, I_D = 250 µA
$R_{DS(on)}$	Static Drain-Source On Resistance			0.025 0.05		V_{GS} = 10 V, I_D = 30 A T_C = 100°C
$I_{D(on)}$	On State Drain Current	60			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, V_{GS} = 10 V
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transductance	25			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, I_D= 30 A
C_{ies}	Input Capacitance		4000		pF	V_{DS} = 25 V
C_{oes}	Output Capacitance		1100		pF	V_{GS} = 0
C_{res}	Reverse Transfer Capacitance		250		pF	f = 1 mHz
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		90		nS	V_{DD} = 80 V, I_D = 30 A
t_r	Rise Time		270		nS	R_G = 50 , V_{GS} = 10 V
$(di/dt)_{on}$	Turn-On Current Slope		270		A/µS	V_{DD} = 80 V, I_D = 30 A R_G = 50 , V_{GS} = 10 V
Q_g	Total Gate Charge		120		nC	V_{DD} = 80 V, I_D = 30 A, V_{GS} = 10 V
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		200		nS	V_{DD} = 80 V, I_D = 30 A
t_f	Fall Time		210		nS	R_G = 50 , V_{GS} = 10 V
t_{cross}	Cross-Over Time		410		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			60	A	
I_{SDM}*	Source Drain Current (pulsed)			240	A	
V_{SD}	Forward On Voltage			1.6	V	I_{SD} = 60 A, V_{GS} = 0
t_{rr}	Reverse Recovery Time		180		nS	I_{SD} = 60 A, di/dt = 100 A/µs V_R = 80 A
Q_{rr}	Reverse Recovery Charge		1.8		µC	
I_{RRM}	Reverse Recovery Current		10		A	

***Pulse Test:** Pulse width < 300µsec, Duty Cycle 1.5%.

OM55N10NK (T_C = 25°C unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			55	A	(repetitive or non-repetitive,T_J = 25°C)
E_{AS}	Single Pulse Avalanche Energy			600	mJ	(starting T_J = 25°C, $I_D = I_{AR}$, V_{DD} = 25 V)
E_{AR}	Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{jmax}, d < 1%)
I_{AR}	Avalanche Current			37	A	(repetitive or non-repetitive, T_J = 100°C)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	100			V	I_D = 250 µA, V_{GS} = 0
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)			250 1000	µA µA	V_{DS} = Max. Rat., V_{DS} = Max. Rat. x 0.8, T_C = 125°C
I_{GSS}	Gate-Body Leakage Current (V_{DS} = 0)			±100	nA	V_{GS} = ±20 V
Electrical Characteristics - ON*						
$V_{GS(th)}$	Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, I_D = 250 µA
$R_{DS(on)}$	Static Drain-Source On Resistance			0.03 0.06		V_{GS} = 10 V, I_D = 30 A T_C = 100°C
$I_{D(on)}$	On State Drain Current	55			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, V_{GS} = 10 V
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transductance	25			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, I_D= 30 A
C_{ies}	Input Capacitance		4000		pF	V_{DS} = 25 V
C_{oes}	Output Capacitance		1100		pF	V_{GS} = 0
C_{res}	Reverse Transfer Capacitance		250		pF	f = 1 mHz
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		90		nS	V_{DD} = 80 V, I_D = 30 A
t_r	Rise Time		270		nS	R_G = 50 , V_{GS} = 10 V
$(di/dt)_{on}$	Turn-On Current Slope		270		A/µS	V_{DD} = 80 V, I_D = 30 A R_G = 50 , V_{GS} = 10 V
Q_g	Total Gate Charge		120		nC	V_{DD} = 80 V, I_D = 30 A, V_{GS} = 10 V
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		200		nS	V_{DD} = 80 V, I_D = 30 A
t_f	Fall Time		210		nS	R_G = 50 , V_{GS} = 10 V
t_{cross}	Cross-Over Time		410		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			55	A	
I_{SDM}*	Source Drain Current (pulsed)			180	A	
V_{SD}	Forward On Voltage			1.5	V	I_{SD} = 55 A, V_{GS} = 0
t_{rr}	Reverse Recovery Time		180		nS	I_{SD} = 55 A, di/dt = 100 A/µs V_R = 80 A
Q_{rr}	Reverse Recovery Charge		1.8		µC	
I_{RRM}	Reverse Recovery Current		10		A	

***Pulse Test:** Pulse width < 300µsec, Duty Cycle 1.5%.

OM75N05NK (T_C = 25°C unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			70	A	(repetitive or non-repetitive,T_J = 25°C)
E_{AS}	Single Pulse Avalanche Energy			900	mJ	(starting T_J = 25°C, $I_D = I_{AR}$, V_{DD} = 25 V)
E_{AR}	Repetitive Avalanche Energy			200	mJ	(pulse width limited by $T_{j\,max}$, d < 1%)
I_{AR}	Avalanche Current			40	A	(repetitive or non-repetitive, T_J = 100°C)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	50			V	I_D = 250 µA, V_{GS} = 0
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)			250 1000	µA µA	V_{DS} = Max. Rat. V_{DS} = Max. Rat. x 0.8, T_C = 125°C
I_{GSS}	Gate-Body Leakage Current (V_{DS} = 0)			±100	nA	V_{GS} = ±20 V
Electrical Characteristics - ON*						
$V_{GS(th)}$	Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, I_D = 250 µA
$R_{DS(on)}$	Static Drain-Source On Resistance			0.016 0.032		V_{GS} = 10 V, I_D = 40 A T_C = 100°C
$I_{D(on)}$	On State Drain Current	75			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, V_{GS} = 10 V
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	25			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, I_D= 40 A
C_{ies}	Input Capacitance		4100		pF	V_{DS} = 25 V
C_{oes}	Output Capacitance		1800		pF	V_{GS} = 0
C_{res}	Reverse Transfer Capacitance		420		pF	f = 1 mHz
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		190		nS	V_{DD} = 20 V, I_D = 40 A
t_r	Rise Time		900		nS	R_G = 50 , V_{GS} = 10 V
$(di/dt)_{on}$	Turn-On Current Slope		150		A/µS	V_{DD} = 20 V, I_D = 40 A R_G = 50 , V_{GS} = 10 V
Q_g	Total Gate Charge		130		nC	V_{DD} = 20 V, I_D = 40 A, V_{GS} = 10 V
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		360		nS	V_{DD} = 35 V, I_D = 75 A
t_f	Fall Time		280		nS	R_G = 50 , V_{GS} = 10 V
t_{cross}	Cross-Over Time		600		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			75	A	
I_{SDM}*	Source Drain Current (pulsed)			300	A	
V_{SD}	Forward On Voltage			1.5	V	I_{SD} = 75 A, V_{GS} = 0
t_{rr}	Reverse Recovery Time		120		nS	I_{SD} = 75 A, di/dt = 100 A/µs V_R = 20 V
Q_{rr}	Reverse Recovery Charge		0.45		µC	
I_{RRM}	Reverse Recovery Current		6.5		A	

***Pulse Test:** Pulse width < 300µsec, Duty Cycle 1.5%.

OM75N06NK (T_C = 25°C unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			70	A	(repetitive or non-repetitive,T_J = 25°C)
E_{AS}	Single Pulse Avalanche Energy			900	mJ	(starting T_J = 25°C, $I_D = I_{AR}$, V_{DD} = 25 V)
E_{AR}	Repetitive Avalanche Energy			200	mJ	(pulse width limited by $T_{j\,max}$, d < 1%)
I_{AR}	Avalanche Current			40	A	(repetitive or non-repetitive, T_J = 100°C)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60			V	I_D = 250 µA, V_{GS} = 0
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)			250 1000	µA µA	V_{DS} = Max. Rat. V_{DS} = Max. Rat. x 0.8, T_C = 125°C
I_{GSS}	Gate-Body Leakage Current (V_{DS} = 0)			±100	nA	V_{GS} = ±20 V
Electrical Characteristics - ON*						
$V_{GS(th)}$	Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, I_D = 250 µA
$R_{DS(on)}$	Static Drain-Source On Resistance			0.016 0.032		V_{GS} = 10 V, I_D = 40 A T_C = 100°C
$I_{D(on)}$	On State Drain Current	75			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, V_{GS} = 10 V
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	25			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, I_D= 40 A
C_{ies}	Input Capacitance		4100		pF	V_{DS} = 25 V
C_{oes}	Output Capacitance		1800		pF	V_{GS} = 0
C_{res}	Reverse Transfer Capacitance		420		pF	f = 1 mHz
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		190		nS	V_{DD} = 25 V, I_D = 40 A
t_r	Rise Time		900		nS	R_G = 50 , V_{GS} = 10 V
$(di/dt)_{on}$	Turn-On Current Slope		150		A/µS	V_{DD} = 25 V, I_D = 40 A R_G = 50 , V_{GS} = 10 V
Q_g	Total Gate Charge		130		nC	V_{DD} = 25 V, I_D = 40 A, V_{GS} = 10 V
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		360		nS	V_{DD} = 40 V, I_D = 75 A
t_f	Fall Time		280		nS	R_G = 50 , V_{GS} = 10 V
t_{cross}	Cross-Over Time		600		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			75	A	
I_{SDM}*	Source Drain Current (pulsed)			300	A	
V_{SD}	Forward On Voltage			1.5	V	I_{SD} = 75 A, V_{GS} = 0
t_{rr}	Reverse Recovery Time		120		nS	I_{SD} = 75 A, di/dt = 100 A/µs V_R = 25 V
Q_{rr}	Reverse Recovery Charge		0.45		µC	
I_{RRM}	Reverse Recovery Current		6.5		A	

***Pulse Test:** Pulse width < 300µsec, Duty Cycle 1.5%.

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

	Parameter	60N10NK	55N10NK	75N06NK	75N05NK	Units
V_{DS}	Drain-Source Voltage	100	100	60	50	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1 M)	100	100	60	50	V
I_D @ T_C = 25°C	Continuous Drain Current[2]	60	55	75	75	A
I_D @ T_C = 100°C	Continuous Drain Current[2]	37	33	45	45	A
I_{DM}	Pulsed Drain Current[1]	180	180	225	225	A
P_D @ T_C = 25°C	Maximum Power Dissipation	130	130	130	130	W
P_D @ T_C = 100°C	Maximum Power Dissipation	55	55	55	55	W
Junction To Case	Linear Derating Factor	1.00	1.00	1.00	1.00	W/°C
T_J	Operating and					
T_{stg}	Storage Temperature Range	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C
Lead Temperature	(1/16" from case for 10 secs.)	300	300	300	300	°C

1 Pulse Test: Pulse width 300 µsec. Duty Cycle 2%. **2 Package Limited.**

THERMAL RESISTANCE (Maximum) at T_A = 25°C

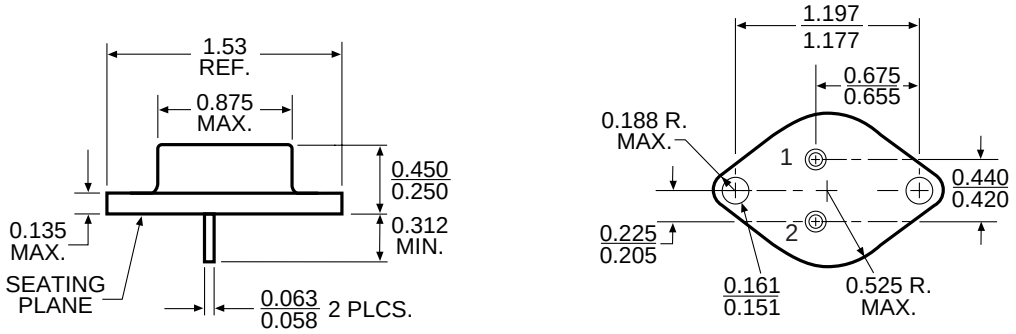
R_{thJC}	Junction-to-Case	1.0	°C/W	
R_{thJA}	Junction-to-Ambient	30	°C/W	Free Air Operation

PACKAGE LIMITATIONS

	Parameter		Unit
I_D	Continous Drain Current	35	A
	Linear Derating Factor, Junction-to-Ambient	.033	W/°C

3.1

MECHANICAL OUTLINE



Pin Connection
Pin 1: Gate
Pin 2: Source
Case: Drain