

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	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)} x R _{DS(on)max} , V _{GS} = 10 V
Electrical Characteristics - Dynamic						
g _s	Forward Transconductance	25			S	V _{DS} > I _{D(on)} x R _{DS(on)max} , I _D = 30 A
C _{ies}	Input Capacitance		4000		pF	V _{DS} = 25 V
C _{oss}	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(off)}	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 _r	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	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)} x R _{DS(on)max} , V _{GS} = 10 V
Electrical Characteristics - Dynamic						
g _s	Forward Transconductance	25			S	V _{DS} > I _{D(on)} x R _{DS(on)max} , I _D = 30 A
C _{ies}	Input Capacitance		4000		pF	V _{DS} = 25 V
C _{oss}	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(off)}	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 _r	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 ($T_C = 25^\circ\text{C}$ unless otherwise specified)

OM75N06NK ($T_C = 25^\circ\text{C}$ unless otherwise specified)

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

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

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

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

OM55N10NK - OM75N06NK

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Parameter	60N10NK	55N10NK	75N06NK	75N05NK	Units
V_{DS}	100	100	60	50	V
V_{DGR}	100	100	60	50	V
$I_D @ T_C = 25^\circ\text{C}$	60	55	75	75	A
$I_D @ T_C = 100^\circ\text{C}$	37	33	45	45	A
I_{DM}	180	180	225	225	A
$P_D @ T_C = 25^\circ\text{C}$	130	130	130	130	W
$P_D @ T_C = 100^\circ\text{C}$	55	55	55	55	W
Junction To Case	1.00	1.00	1.00	1.00	W/ $^\circ\text{C}$
T_J	Operating and				
T_{stg}	Storage Temperature Range				
Lead Temperature	-55 to 150	-55 to 150	-55 to 150	-55 to 150	$^\circ\text{C}$
(1/16" from case for 10 secs.)	300	300	300	300	$^\circ\text{C}$

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

THERMAL RESISTANCE (Maximum) at $T_A = 25^\circ\text{C}$

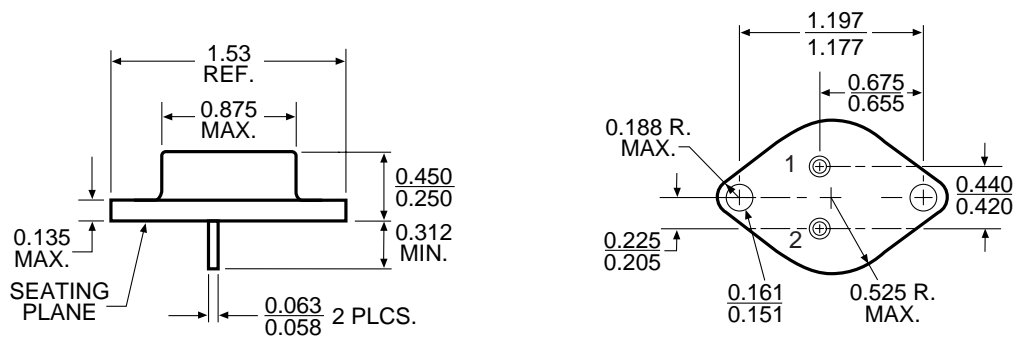
R_{thJC}	Junction-to-Case	1.0	$^\circ\text{C}/\text{W}$	
R_{thJA}	Junction-to-Ambient	30	$^\circ\text{C}/\text{W}$	Free Air Operation

PACKAGE LIMITATIONS

Parameter	Unit		
I_D	Continuous Drain Current	35	A
	Linear Derating Factor, Junction-to-Ambient	.033	W/ $^\circ\text{C}$

3.1

MECHANICAL OUTLINE



Pin Connection

Pin 1: Gate
Pin 2: Source
Case: Drain