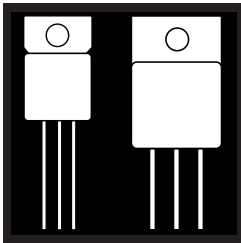


OM60N06SA OM60N05SA OM50N06ST
OM50N06SA OM50N05SA OM50N05ST

LOW VOLTAGE, LOW $R_{DS(on)}$ POWER MOSFETS IN HERMETIC ISOLATED PACKAGE



50V And 60V Ultra Low $R_{DS(on)}$
Power MOSFETs In TO-257 And TO-254
Isolated Packages

FEATURES

- Isolated Hermetic Metal Packages
- Ultra Low $R_{DS(on)}$
- Low Conductive Loss/Low Gate Charge
- Available Screened To MIL-S-19500, TX, TXV And S Levels
- Ceramic Feedthroughs Available

DESCRIPTION

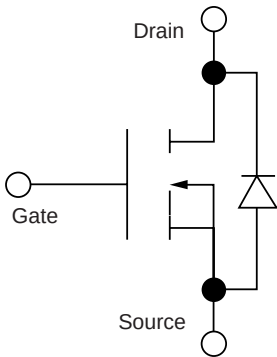
This series of hermetic packaged MOSFETs are ideally suited for low voltage applications; battery powered voltage power supplies, motor controls, dc to dc converters and synchronous rectification. The low conduction loss allows smaller heat sinking and the low gate charge simpler drive circuitry.

MAXIMUM RATINGS (Per Device)

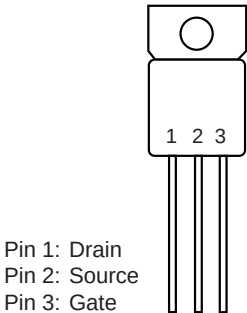
PART NO.	V_{DS} (V)	$R_{DS(on)}$ ()	I_D (A)	Package
OM60N06SA	60	.025	60	TO-254AA
OM50N06SA	60	.030	50	TO-254AA
OM50N06ST	60	.035	50	TO-257AA
OM60N05SA	50	.025	60	TO-254AA
OM50N05SA	50	.030	50	TO-254AA
OM50N05ST	50	.035	50	TO-257AA

3.1

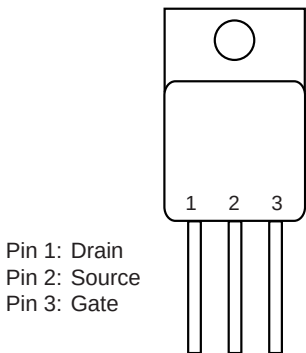
SCHEMATIC



T-3 PIN CONNECTION



M-PAK PIN CONNECTION



OM60N06SA - OM50N05ST

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

Parameter		60N06SA	50N06ST 50N05SA	60N05SA	50N05ST 50N05SA	Units
V _{DS}	Drain-Source Voltage	60	60	50	50	V
V _{DGR}	Drain-Gate Voltage (R _{GS} = 1 M)	60	60	50	50	V
I _D @ T _C = 25°C	Continuous Drain Current ²	55	50	55	50	A
I _D @ T _C = 100°C	Continuous Drain Current ²	37	33	37	33	A
I _{DM}	Pulsed Drain Current ¹	220	200	220	200	A
P _D @ T _C = 25°C	Maximum Power Dissipation	100	100	100	100	W
P _D @ T _C = 100°C	Maximum Power Dissipation	40	40	40	40	W
Junction-To-Case	Linear Derating Factor ¹	.80	.80	.80	.80	W/°C
T _J	Operating and	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C
T _{stg}	Storage Temperature Range					
Lead Temperature	(1/16" from case for 10 secs.)	300	300	300	300	°C

1 Pulse Test: Pulse width 300 μsec. Duty Cycle 1.5%.
2 Package Limited SA I_D = 25 A, SC SC I_D = 35 A @ 25 °C

THERMAL RESISTANCE

R _{thJC}	Junction-to-Case	1.25	°C/W
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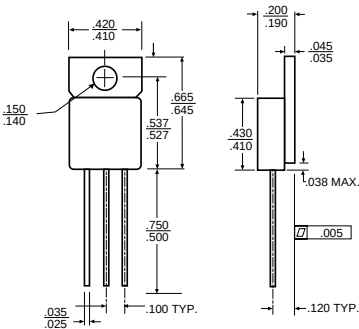
PACKAGE LIMITATIONS

Parameters		TO254AA	TO-257AA	Unit
I _D	Continuous Drain Current	25	15	A
	Linear Derating Factor, Junction-to-Ambient	.020	.015	W/°C
R _{thJA}	Thermal Resistance, Junction-to-Ambient (Free Air Operation)	50	65	°C/W
	Linear Derating, Junction-to-Case	0.8	0.8	W/°C

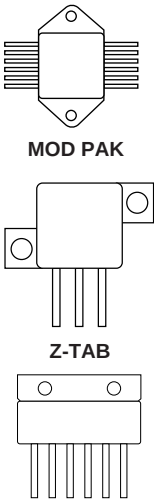
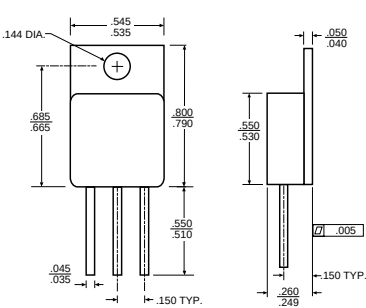
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PACKAGE OPTIONS

T-3 MECHANICAL OUTLINE



M-PAK MECHANICAL OUTLINE



6 PIN SIP

Notes:
• Standard Products are supplied with glass feedthroughs. For ceramic feedthroughs, add the letter "C" to the part number. Example - OMXXXXCSA.
• MOSFETs are also available in Z-Pak, dual and quad pak styles. Please call the factory for more information.

OM60N06SA ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I_{AR} Avalanche Current			55	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS} Single Pulse Avalanche Energy			520	mJ	(starting $T_J = 25^\circ\text{C}$, $I_B = I_{AR}$, $V_{DO} = 25\text{ V}$)
E_{RR} Repetitive Avalanche Energy			130	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR} Avalanche Current			34	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF					
V_{BROSS} Drain-Source Breakdown Voltage	60			V	$I_B = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS} Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250	μA	$V_{DS} = \text{Max. Rat.}$
I_{GSS} Gate-Body Leakage Current ($V_{DS} = 0$)			1000	μA	$V_{GS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
			± 100	nA	$V_{GS} = \pm 20\text{ V}$
Electrical Characteristics - ON*					
$V_{GS(th)}$ Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, $I_B = 250\text{ }\mu\text{A}$
$R_{DS(on)}$ Static Drain-Source On Resistance			.025		$V_{GS} = 10\text{ V}$, $I_B = 30\text{ A}$
			.050		$T_C = 100^\circ\text{C}$
I_{DON} On State Drain Current	55			A	$V_{DS} > I_{DON} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic					
g_{fs} Forward Transconductance	16			S	$V_{DS} > I_{DON} \times R_{DS(on)max}$, $I_B = 30\text{ A}$
C_{iss} Input Capacitance		2500		pF	$V_{DS} = 25\text{ V}$
C_{oss} Output Capacitance		950		pF	$V_{GS} = 0$
C_{res} Reverse Transfer Capacitance		250		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On					
$T_{d(on)}$ Turn-On Time		110		nS	$V_{DO} = 25\text{ V}$, $I_B = 55\text{ A}$
t_r Rise Time		300		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$ Turn-On Current Slope		160		A/ μS	$V_{DO} = 40\text{ V}$, $I_B = 55\text{ A}$
					$R_G = 50$, $V_{GS} = 10\text{ V}$
Q_g Total Gate Charge		65		nC	$V_{DO} = 25\text{ V}$, $I_B = 30\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off					
$T_{d(off)}$ Off Voltage Rise Time		160		nS	$V_{DO} = 40\text{ V}$, $I_B = 55\text{ A}$
t_f Fall Time		160		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
t_{cross} Cross-Over Time		320	440	nS	
Electrical Characteristics - Source Drain Diode					
I_{SD} Source Drain Current			55	A	
I_{SDM}^* Source Drain Current (pulsed)			200	A	
V_{SD} Forward On Voltage			1.6	V	$I_{SD} = 55\text{ A}$, $V_{GS} = 0$
t_r Reverse Recovery Time			100	nS	$I_{SD} = 55\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$
					$V_R = 25\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr} Reverse Recovery Charge			.25	μC	
I_{RRM} Reverse Recovery Current			5	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.**OM50N06SA** ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I_{AR} Avalanche Current			50	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS} Single Pulse Avalanche Energy			400	mJ	(starting $T_J = 25^\circ\text{C}$, $I_B = I_{AR}$, $V_{DO} = 25\text{ V}$)
E_{RR} Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR} Avalanche Current			30	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF					
V_{BROSS} Drain-Source Breakdown Voltage	60			V	$I_B = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS} Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250	μA	$V_{DS} = \text{Max. Rat.}$
I_{GSS} Gate-Body Leakage Current ($V_{DS} = 0$)			1000	μA	$V_{GS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
			± 100	nA	$V_{GS} = \pm 20\text{ V}$
Electrical Characteristics - ON*					
$V_{GS(th)}$ Gate Threshold Voltage	2		4	V	$V_{DS} = V_{GS}$, $I_B = 250\text{ }\mu\text{A}$
$R_{DS(on)}$ Static Drain-Source On Resistance			.028		$V_{GS} = 10\text{ V}$, $I_B = 25\text{ A}$
			.056		$T_C = 100^\circ\text{C}$
I_{DON} On State Drain Current	50			A	$V_{DS} > I_{DON} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic					
g_{fs} Forward Transconductance	17			S	$V_{DS} > I_{DON} \times R_{DS(on)max}$, $I_B = 25\text{ A}$
C_{iss} Input Capacitance		2000		pF	$V_{DS} = 25\text{ V}$
C_{oss} Output Capacitance		1000		pF	$V_{GS} = 0$
C_{res} Reverse Transfer Capacitance		300		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On					
$T_{d(on)}$ Turn-On Time		45		nS	$V_{DO} = 25\text{ V}$, $I_B = 29\text{ A}$
t_r Rise Time		90		nS	$R_G = 4.7$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$ Turn-On Current Slope		200		A/ μS	$V_{DO} = 40\text{ V}$, $I_B = 50\text{ A}$
					$R_G = 50$, $V_{GS} = 10\text{ V}$
Q_g Total Gate Charge		45		nC	$V_{DO} = 40\text{ V}$, $I_B = 50\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off					
$T_{d(off)}$ Off Voltage Rise Time		160		nS	$V_{DO} = 40\text{ V}$, $I_B = 50\text{ A}$
t_f Fall Time		90		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
t_{cross} Cross-Over Time		250		nS	
Electrical Characteristics - Source Drain Diode					
I_{SD} Source Drain Current			50	A	
I_{SDM}^* Source Drain Current (pulsed)			200	A	
V_{SD} Forward On Voltage			2	V	$I_{SD} = 50\text{ A}$, $V_{GS} = 0$
t_r Reverse Recovery Time			150	nS	$I_{SD} = 50\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$
					$V_R = 30\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr} Reverse Recovery Charge			0.2	μC	
I_{RRM} Reverse Recovery Current			4	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.

3.1

OM50N06ST ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			50	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS}	Single Pulse Avalanche Energy			400	mJ	(starting $T_J = 25^\circ\text{C}$, $I_D = I_{AR}$, $V_{DD} = 25\text{ V}$)
E_{AR}	Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR}	Avalanche Current			30	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	60			V	$I_D = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250 1000	μA	$V_{DS} = \text{Max. Rat.}$ $V_{DS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
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	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$
$R_{DS(on)}$	Static Drain-Source On Resistance			.033 .066		$V_{GS} = 10\text{ V}$, $I_D = 25\text{ A}$ $T_C = 100^\circ\text{C}$
$I_{D(on)}$	On State Drain Current	50			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	17			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $I_D = 25\text{ A}$
C_{ies}	Input Capacitance		2000		pF	$V_{DS} = 25\text{ V}$
C_{oes}	Output Capacitance		1000		pF	$V_{GS} = 0$
C_{res}	Reverse Transfer Capacitance		300		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		45		nS	$V_{DD} = 25\text{ V}$, $I_D = 29\text{ A}$
t_r	Rise Time		90		nS	$R_G = 4.7$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$	Turn-On Current Slope		200		A/ μS	$V_{DD} = 40\text{ V}$, $I_D = 50\text{ A}$ $R_G = 50$, $V_{GS} = 10\text{ V}$
Q_g	Total Gate Charge		45		nC	$V_{DD} = 40\text{ V}$, $I_D = 50\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		160		nS	$V_{DD} = 40\text{ V}$, $I_D = 50\text{ A}$
t_f	Fall Time		90		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
t_{cross}	Cross-Over Time		250		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			50	A	
I_{SDM}^*	Source Drain Current (pulsed)			200	A	
V_{SD}	Forward On Voltage			2	V	$I_{SD} = 50\text{ A}$, $V_{GS} = 0$
t_{rr}	Reverse Recovery Time			150	nS	$I_{SD} = 50\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr}	Reverse Recovery Charge			0.2	μC	
I_{RRM}	Reverse Recovery Current			4	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.**OM60N05SA** ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			55	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS}	Single Pulse Avalanche Energy			520	mJ	(starting $T_J = 25^\circ\text{C}$, $I_D = I_{AR}$, $V_{DD} = 25\text{ V}$)
E_{AR}	Repetitive Avalanche Energy			130	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR}	Avalanche Current			34	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	50			V	$I_D = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250 1000	μA	$V_{DS} = \text{Max. Rat.}$ $V_{DS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
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	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$
$R_{DS(on)}$	Static Drain-Source On Resistance			.025 .050		$V_{GS} = 10\text{ V}$, $I_D = 30\text{ A}$ $T_C = 100^\circ\text{C}$
$I_{D(on)}$	On State Drain Current	55			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	16			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $I_D = 30\text{ A}$
C_{ies}	Input Capacitance		2500		pF	$V_{DS} = 25\text{ V}$
C_{oes}	Output Capacitance		950		pF	$V_{GS} = 0$
C_{res}	Reverse Transfer Capacitance		250		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		110		nS	$V_{DD} = 25\text{ V}$, $I_D = 55\text{ A}$
t_r	Rise Time		300		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$	Turn-On Current Slope		160		A/ μS	$V_{DD} = 40\text{ V}$, $I_D = 55\text{ A}$ $R_G = 50$, $V_{GS} = 10\text{ V}$
Q_g	Total Gate Charge		65		nC	$V_{DD} = 25\text{ V}$, $I_D = 30\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		160		nS	$V_{DD} = 40\text{ V}$, $I_D = 55\text{ A}$
t_f	Fall Time		160		nS	$R_G = 50$, $V_{GS} = 10\text{ V}$
t_{cross}	Cross-Over Time		320		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			55	A	
I_{SDM}^*	Source Drain Current (pulsed)			200	A	
V_{SD}	Forward On Voltage			1.6	V	$I_{SD} = 55\text{ A}$, $V_{GS} = 0$
t_{rr}	Reverse Recovery Time			100	nS	$I_{SD} = 55\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 25\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr}	Reverse Recovery Charge			.25	μC	
I_{RRM}	Reverse Recovery Current			5	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.

OM50N05SA ($T_C = 25^\circ\text{C}$ unless otherwise specified)

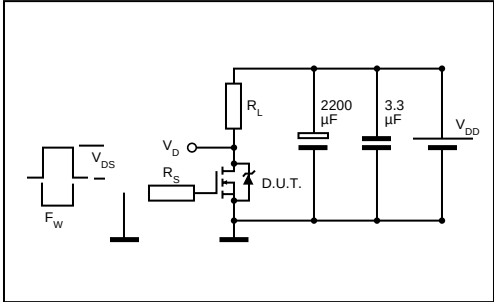
Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			50	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS}	Single Pulse Avalanche Energy			400	mJ	(starting $T_J = 25^\circ\text{C}$, $I_0 = I_{AR}$, $V_{DD} = 25\text{ V}$)
E_{AR}	Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR}	Avalanche Current			30	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	50			V	$I_0 = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250 1000	μA μA	$V_{DS} = \text{Max. Rat.}$ $V_{DS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
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	$V_{DS} = V_{GS}$, $I_0 = 250\text{ }\mu\text{A}$
$R_{DS(on)}$	Static Drain-Source On Resistance			.028 .056		$V_{GS} = 10\text{ V}$, $I_0 = 25\text{ A}$ $T_C = 100^\circ\text{C}$
$I_{D(on)}$	On State Drain Current	50			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	17			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $I_0 = 25\text{ A}$
C_{ies}	Input Capacitance		2000		pF	$V_{DS} = 25\text{ V}$
C_{oes}	Output Capacitance		1000		pF	$V_{GS} = 0$
C_{res}	Reverse Transfer Capacitance		300		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		45		nS	$V_{DD} = 25\text{ V}$, $I_0 = 29\text{ A}$
t_r	Rise Time		90		nS	$R_G = 4.7\text{ }\Omega$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$	Turn-On Current Slope		200		A/ μS	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$ $R_G = 50\text{ }\Omega$, $V_{GS} = 10\text{ V}$
Q_g	Total Gate Charge		45		nC	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		160		nS	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$
t_f	Fall Time		90		nS	$R_G = 50\text{ }\Omega$, $V_{GS} = 10\text{ V}$
t_{cross}	Cross-Over Time		250		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			50	A	
I_{SDM}^*	Source Drain Current (pulsed)			200	A	
V_{SD}	Forward On Voltage			2	V	$I_{SD} = 50\text{ A}$, $V_{GS} = 0$
t_{rr}	Reverse Recovery Time			150	nS	$I_{SD} = 50\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr}	Reverse Recovery Charge			0.2	μC	
I_{RRM}	Reverse Recovery Current			4	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.**OM50N05ST** ($T_C = 25^\circ\text{C}$ unless otherwise specified)

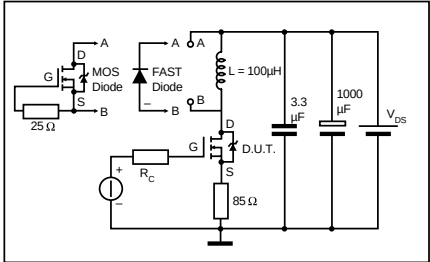
Avalanche Characteristics		Min.	Typ.	Max.	Units	Test Conditions
I_{AR}	Avalanche Current			50	A	(repetitive or non-repetitive, $T_J = 25^\circ\text{C}$)
E_{AS}	Single Pulse Avalanche Energy			400	mJ	(starting $T_J = 25^\circ\text{C}$, $I_0 = I_{AR}$, $V_{DD} = 25\text{ V}$)
E_{AR}	Repetitive Avalanche Energy			100	mJ	(pulse width limited by T_{Jmax} , $d < 1\%$)
I_{AR}	Avalanche Current			30	A	(repetitive or non-repetitive, $T_J = 100^\circ\text{C}$)
Electrical Characteristics - OFF						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	50			V	$I_0 = 250\text{ }\mu\text{A}$, $V_{GS} = 0$
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)			250 1000	μA μA	$V_{DS} = \text{Max. Rat.}$ $V_{DS} = \text{Max. Rat.} \times 0.8$, $T_C = 125^\circ\text{C}$
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	$V_{DS} = V_{GS}$, $I_0 = 250\text{ }\mu\text{A}$
$R_{DS(on)}$	Static Drain-Source On Resistance			.033 .066		$V_{GS} = 10\text{ V}$, $I_0 = 25\text{ A}$ $T_C = 100^\circ\text{C}$
$I_{D(on)}$	On State Drain Current	50			A	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Dynamic						
g_{fs}	Forward Transconductance	17			S	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$, $I_0 = 25\text{ A}$
C_{ies}	Input Capacitance		2000		pF	$V_{DS} = 25\text{ V}$
C_{oes}	Output Capacitance		1000		pF	$V_{GS} = 0$
C_{res}	Reverse Transfer Capacitance		300		pF	$f = 1\text{ MHz}$
Electrical Characteristics - Switching On						
$T_{d(on)}$	Turn-On Time		45		nS	$V_{DD} = 25\text{ V}$, $I_0 = 29\text{ A}$
t_r	Rise Time		90		nS	$R_G = 4.7\text{ }\Omega$, $V_{GS} = 10\text{ V}$
$(di/dt)_{on}$	Turn-On Current Slope		200		A/ μS	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$ $R_G = 50\text{ }\Omega$, $V_{GS} = 10\text{ V}$
Q_g	Total Gate Charge		45		nC	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$, $V_{GS} = 10\text{ V}$
Electrical Characteristics - Switching Off						
$T_{r(Voff)}$	Off Voltage Rise Time		160		nS	$V_{DD} = 40\text{ V}$, $I_0 = 50\text{ A}$
t_f	Fall Time		90		nS	$R_G = 50\text{ }\Omega$, $V_{GS} = 10\text{ V}$
t_{cross}	Cross-Over Time		250		nS	
Electrical Characteristics - Source Drain Diode						
I_{SD}	Source Drain Current			50	A	
I_{SDM}^*	Source Drain Current (pulsed)			200	A	
V_{SD}	Forward On Voltage			2	V	$I_{SD} = 50\text{ A}$, $V_{GS} = 0$
t_{rr}	Reverse Recovery Time			150	nS	$I_{SD} = 50\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$, $T_J = 150^\circ\text{C}$
Q_{rr}	Reverse Recovery Charge			0.2	μC	
I_{RRM}	Reverse Recovery Current			4	A	

*Pulsed: Pulse Duration 300 μs , Duty Cycle 1.5%.

Switching Times Test Circuits
For Resistive Load

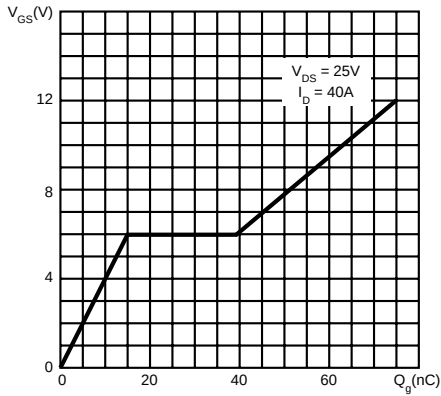


Test Circuit For Inductive Load Switching
And Diode Reverse Recovery Time

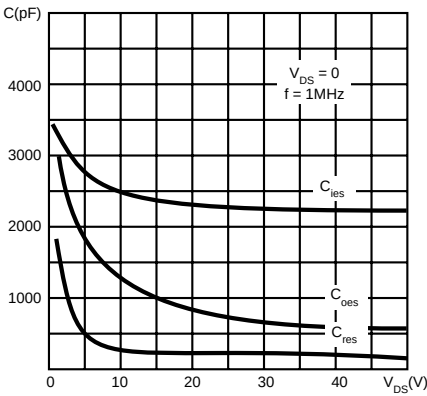


TYPICAL CHARACTERISTICS

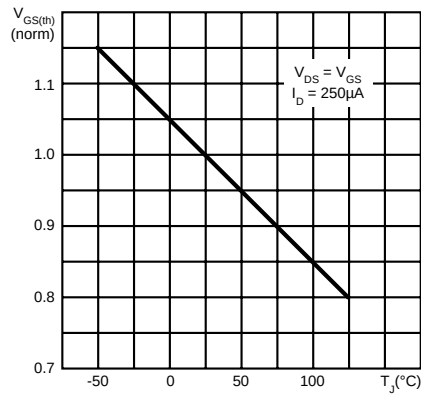
Gate Charge vs Gate-Source Voltage



Capacitance Variations



Normalized Gate Threshold
Voltage vs Temperature



Normalized On Resistance
vs Temperature

