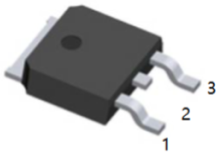
General Description

This device employs a new advanced trench technology and features low gate charge while maintaining low on-resistance.

Optimized for switching applications, this device improves the overall efficiency of DC/DC converters and allows operation to higher switching frequencies.



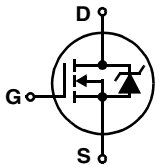
1.G 2.D 3.S

TO-252(DPAK) top view

Applications

- DC/DC converters

Features



- V_{DS}(V) = 30V
- I_D =50A (V_{GS}= 10V)
- $R_{DS(ON)}$ <5.2mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ <8.5mΩ (V_{GS} = 4.5V)
- Q_g (Typ) = 30nC, V_{GS} = 5V
- Q_{gd} (Typ) = 11nC
- C_{ISS} (Typ) = 3400pF

MOSFET Maximum Ratings T_A = 25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{DSS}	Drain to Source Voltage	30	V
V_{GS}	Gate to Source Voltage	±20	V
I_D	Drain Current Continuous (T_C = 25°C, V_{GS} = 10V)	50	A
	Continuous (T_C = 100°C, V_{GS} = 4.5V)	50	A
	Continuous (T_C = 25°C, V_{GS} = V, $R_{\theta JC}$ = 52°C/W)	16	A
	Pulsed	Figure 4	A
P_D	Power dissipation Derate above 25°C	125 0.83	W W/°C
T_J, T_{STG}	Operating and Storage Temperature	-55 to 175	°C

Thermal Characteristics

$R_{\theta JC}$	Thermal Resistance Junction to Case TO-252	1.2	°C/W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient TO-252	100	°C/W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient TO-252, 1in^2 copper pad area	52	°C/W

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Typ	Max	Units
B_{VDSS}	Drain to Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V		30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 25V				1	μA
I_{GSS}	Gate to Source Leakage Current	V_{GS} = ±20V				±100	nA
$V_{GS(TH)}$	Gate to Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 250μA		1		3	V
$r_{DS(ON)}$	Drain to Source On Resistance	I_D = 50A, V_{GS} = 10V			5.2	6	mΩ
		I_D = 50A, V_{GS} = 4.5V			8.5	9.5	
C_{ISS}	Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz			3400		pF
C_{OSS}	Output Capacitance				650		pF
C_{RSS}	Reverse Transfer Capacitance				300		pF
$Q_{g(TOT)}$	Total Gate Charge at 10V	V_{GS} = 0V to 10V	V_{DD} = 15V, I_D = 50A, I_g = 1.0mA		60	90	nC
$Q_{g(5)}$	Total Gate Charge at 5V	V_{GS} = 0V to 5V			30	45	nC
$Q_{g(TH)}$	Threshold Gate Charge	V_{GS} = 0V to 1V			3.0	4.5	nC
Q_{gs}	Gate to Source Gate Charge				10		nC
Q_{gd}	Gate to Drain “Miller” Charge				11		nC
t_{ON}	Turn-On Time	V_{DD} = 15V, I_D = 16A, V_{GS} = 4.5V, R_{GS} = 4.3Ω				131	ns
$t_{d(ON)}$	Turn-On Delay Time				16		ns
t_r	Rise Time				70		ns
$t_{d(OFF)}$	Turn-Off Delay Time				34		ns
t_f	Fall Time				30		ns
t_{OFF}	Turn-Off Time					97	ns
t_{ON}	Turn-On Time	V_{DD} = 15V, I_D = 16A, V_{GS} = 10V, R_{GS} = 4.3Ω				80	ns
$t_{d(ON)}$	Turn-On Delay Time				10		ns
t_r	Rise Time				43		ns
$t_{d(OFF)}$	Turn-Off Delay Time				62		ns
t_f	Fall Time				29		ns
t_{OFF}	Turn-Off Time					137	ns
t_{AV}	Avalanche Time	I_D = 30A, L = 200μH		428			μs
V_{SD}	Source to Drain Diode Voltage	I_{SD} = 50A				1.25	V
		I_{SD} = 25A				1.0	V
t_{rr}	Reverse Recovery Time	I_{SD} = 50A, dI_{SD}/dt = 100A/μs				35	ns
Q_{RR}	Reverse Recovered Charge	I_{SD} = 50A, dI_{SD}/dt = 100A/μs				30	nC

Typical Characteristic

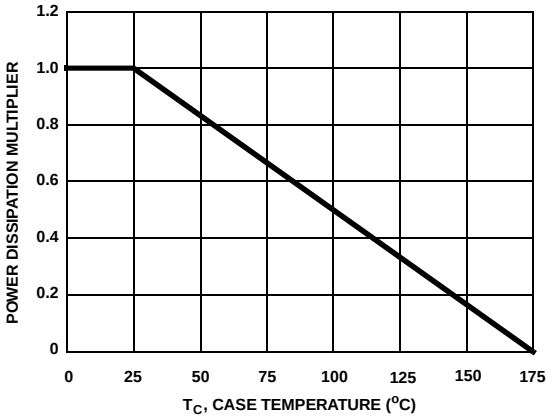


Figure 1. Normalized Power Dissipation vs Ambient Temperature

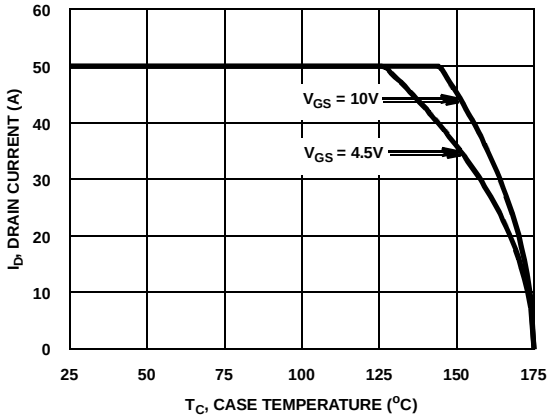


Figure 2. Maximum Continuous Drain Current vs Case Temperature

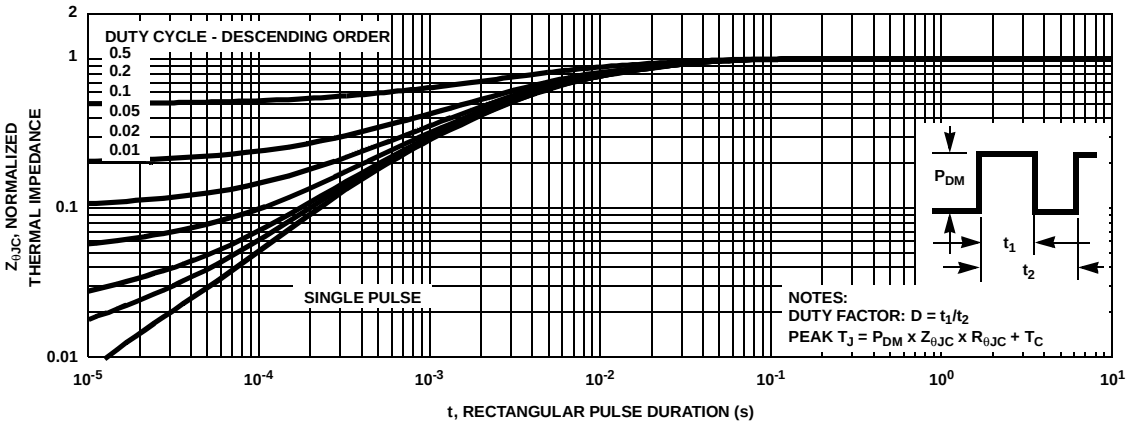


Figure 3. Normalized Maximum transient Thermal Impedance

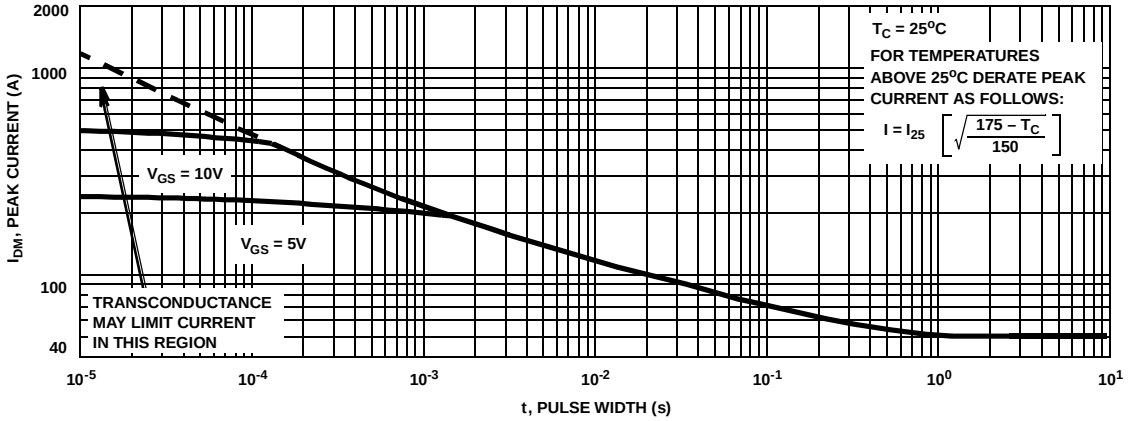


Figure 4. Peak Current Capability

Typical Characteristic

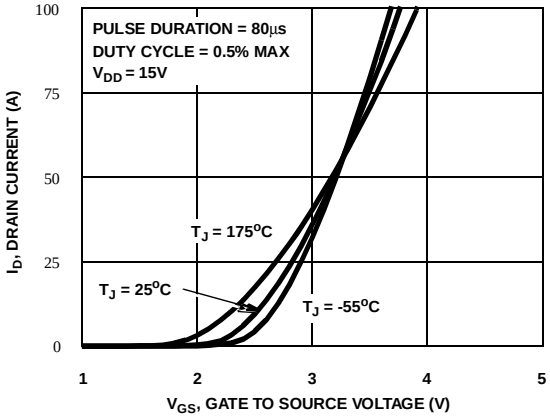


Figure 5. Transfer Characteristics

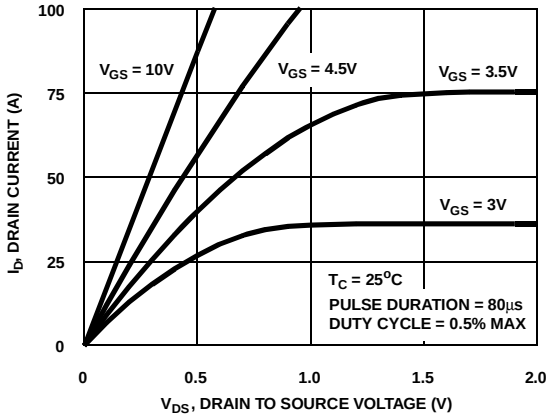


Figure 6. Saturation Characteristics

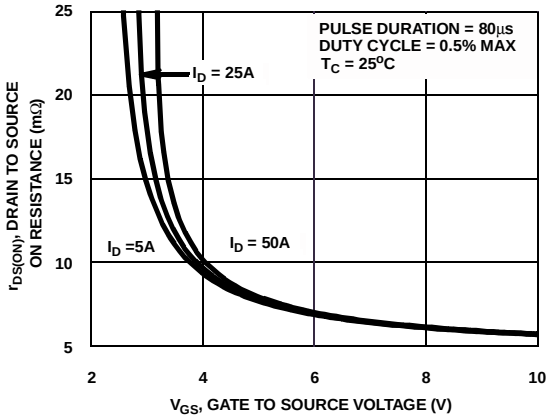


Figure 7. Drain to Source On Resistance vs Gate Voltage and Drain Current

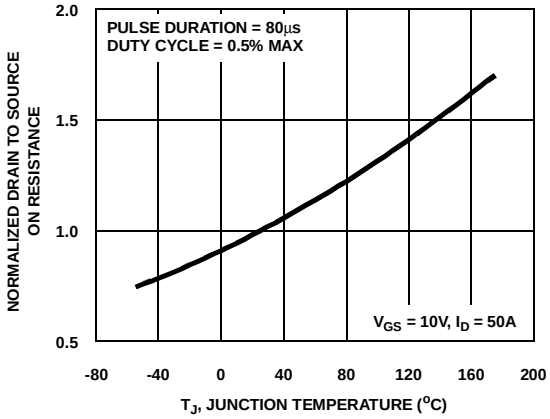


Figure 8. Normalized Drain to Source On Resistance vs Junction Temperature

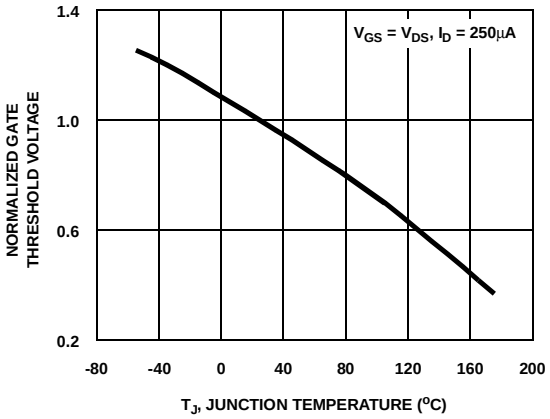


Figure 9. Normalized Gate Threshold Voltage vs Junction Temperature

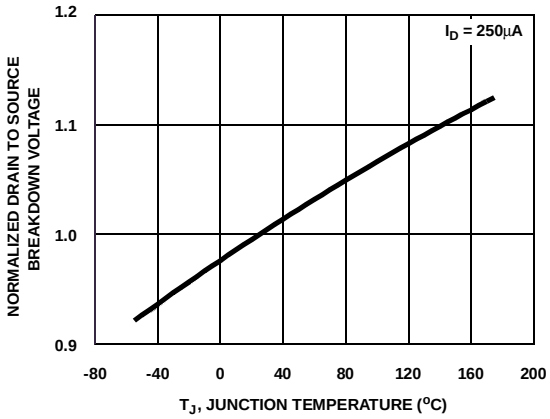


Figure 10. Normalized Drain to Source Breakdown Voltage vs Junction Temperature

Typical Characteristic (Continued)

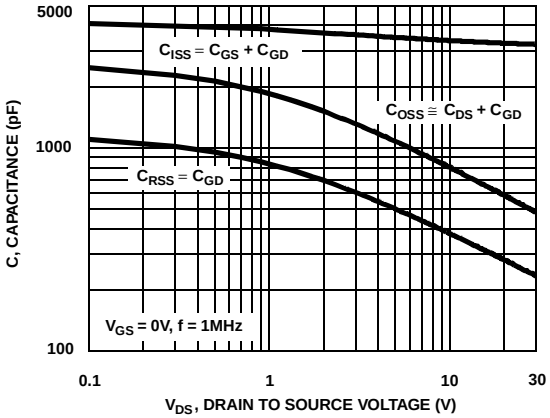


Figure 11. Capacitance vs Drain to Source Voltage

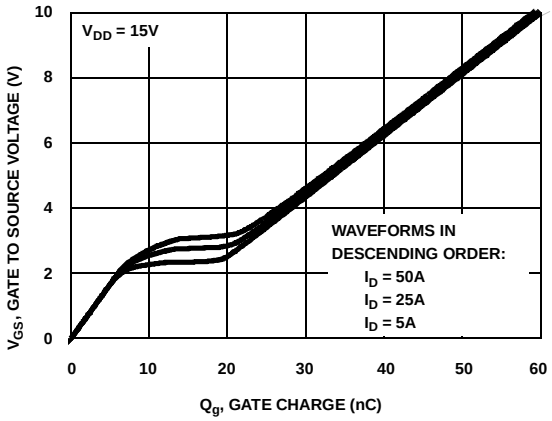


Figure 12. Gate Charge Waveforms for Constant Gate Currents

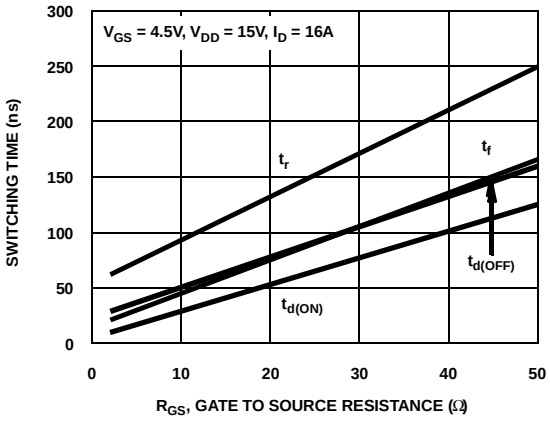


Figure 13. Switching Time vs Gate Resistance

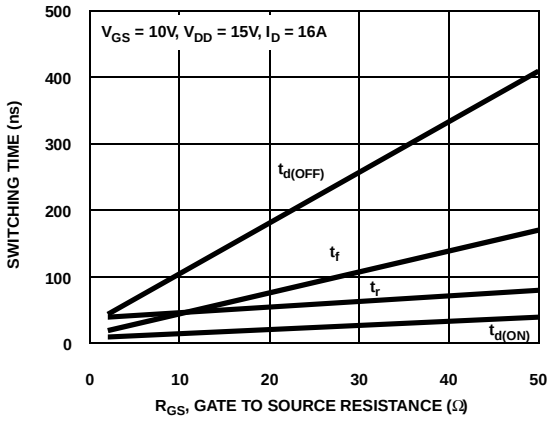
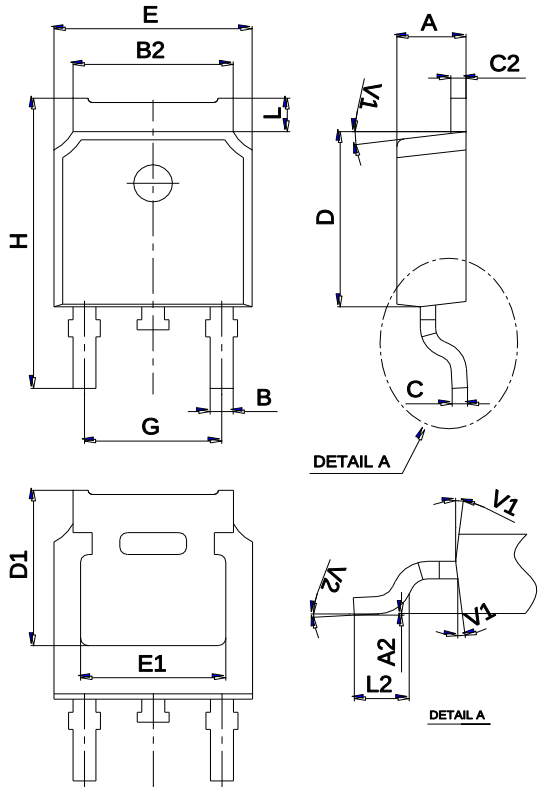


Figure 14. Switching Time vs Gate Resistance

Package Mechanical Data TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Ordering information

Order code	Package	Baseqty	Deliverymode
UMW ISL9N306AD3ST	TO-252	2500	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

>>UMW(友台半导体)