MT0635S

N-Channel Enhancement Mode Field Effect Transistor

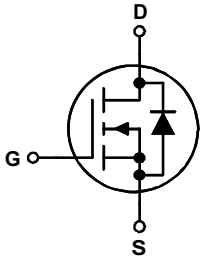
MT Semiconductor®

http://www.mtsemi.com

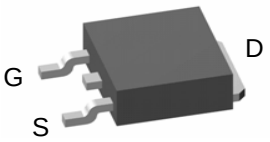
Features

- 60V,35A
- $R_{DS(ON)}$ = 28mΩ (Typ.)@V_{GS} = 10V
- $R_{DS(ON)}$ = 32mΩ (Typ.) @ V_{GS} = 4.5V
- Low Total Gate Charge
- Low Reverse Transfer Capacitance
- Improved dv/dt Capability
- Fast Switching Speed

Simplified Schematic



MARKING DIAGRAM & PIN ASSIGNMENT



D-PAK
TO-252-2L

Application

- Uninterruptible Power Supply(UPS)
- Inverter System

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	35	A
		T_C = 100℃	20	A
I_{DM}	Pulsed Drain Current note1		80	A
P_D	Power Dissipation	T_C = 25℃	30	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		5	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		50	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =60V, V_{GS} = 0V, T_J= 25℃	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V,V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =10V, I_D =20A	-	28	32	mΩ
		V_{GS} =4.5V, I_D =10A	-	32	35	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 30V, V_{GS} = 0V, f = 1.0MHz	-	800	-	pF
C_{oss}	Output Capacitance		-	68	-	pF
C_{rss}	Reverse Transfer Capacitance		-	36	-	pF
Q_g	Total Gate Charge	V_{DS} =10V, I_D =30A, V_{GS} = 10V	-	15	-	nC
Q_{gs}	Gate-Source Charge		-	2.4	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	2.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=30V, R_L=1.0Ω, R_{REN} =3Ω,	-	5	-	ns
t_r	Turn-on Rise Time		-	39	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	19	-	ns
t_f	Turn-off Fall Time		-	7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	35	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	80	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=10A	-	-	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} =0V, I_S=20A, di/dt=500A/μs	-	23	-	ns
Q_{rr}	Reverse Recovery Charge		-	45	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

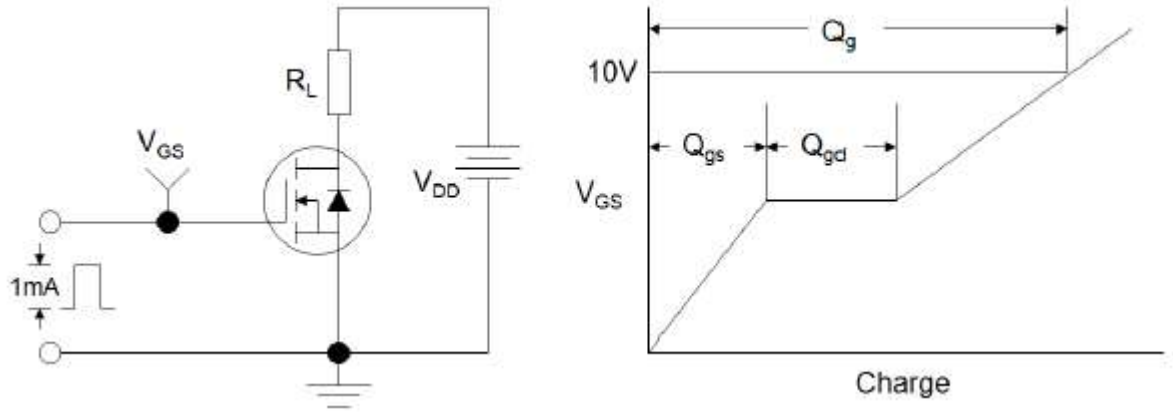


Figure1:Gate Charge Test Circuit & Waveform

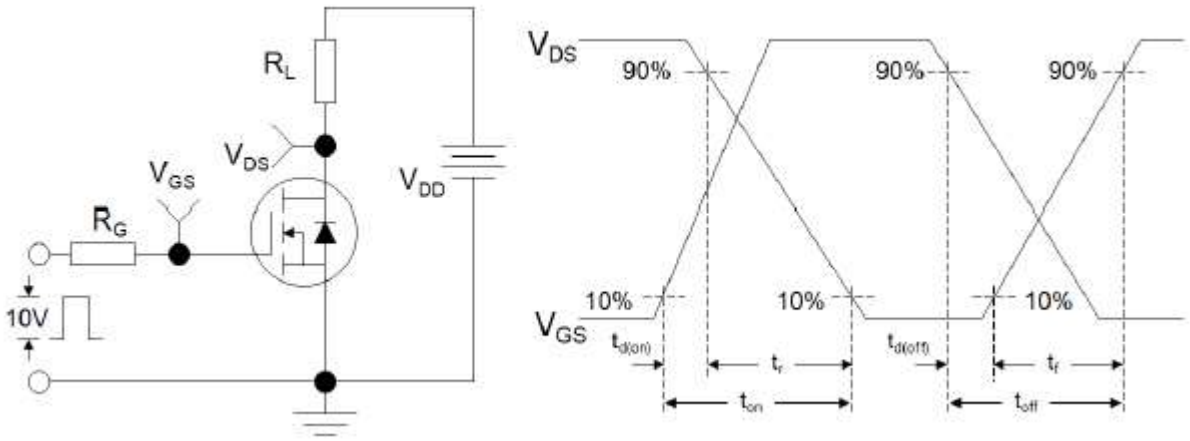


Figure 2: Resistive Switching Test Circuit & Waveforms

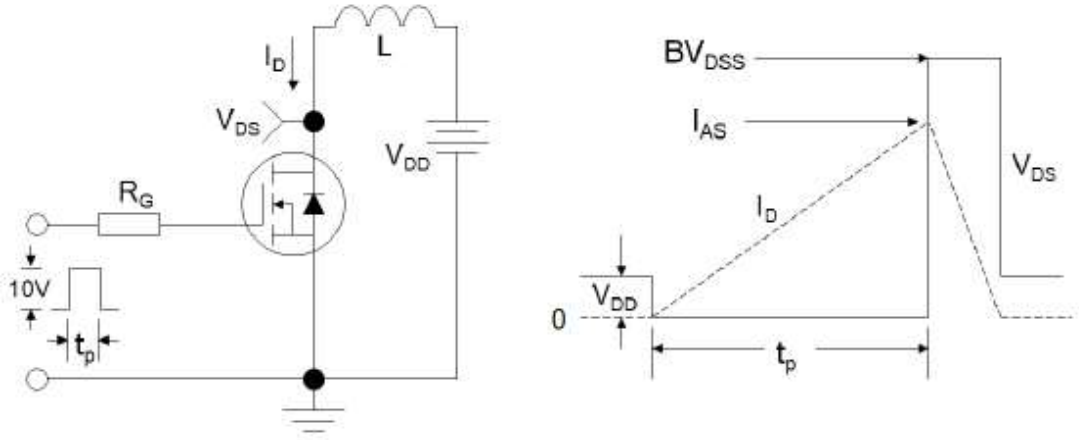


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

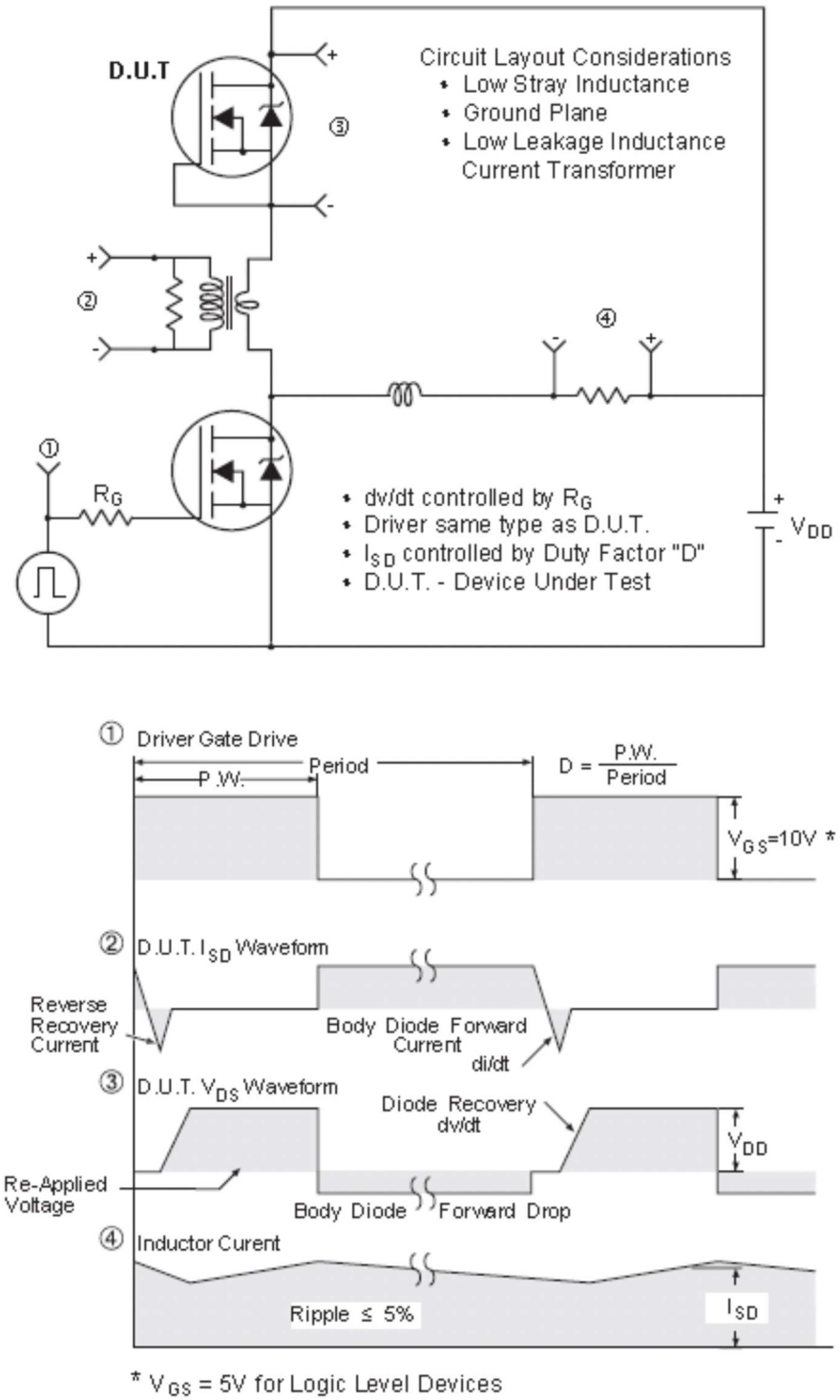
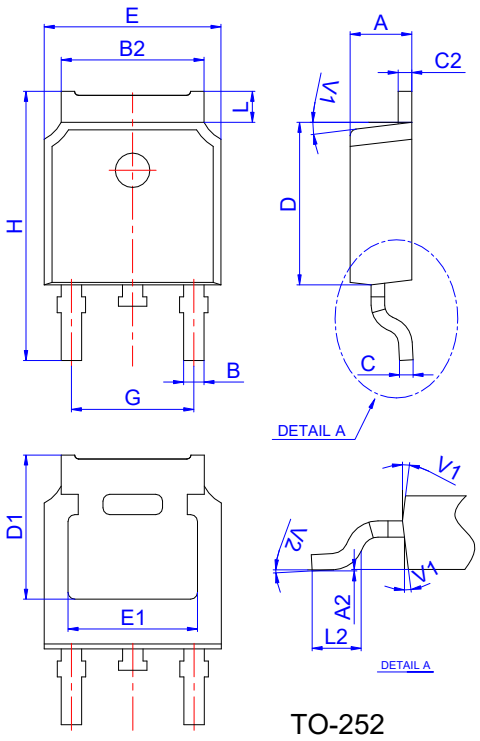


Figure 4:Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

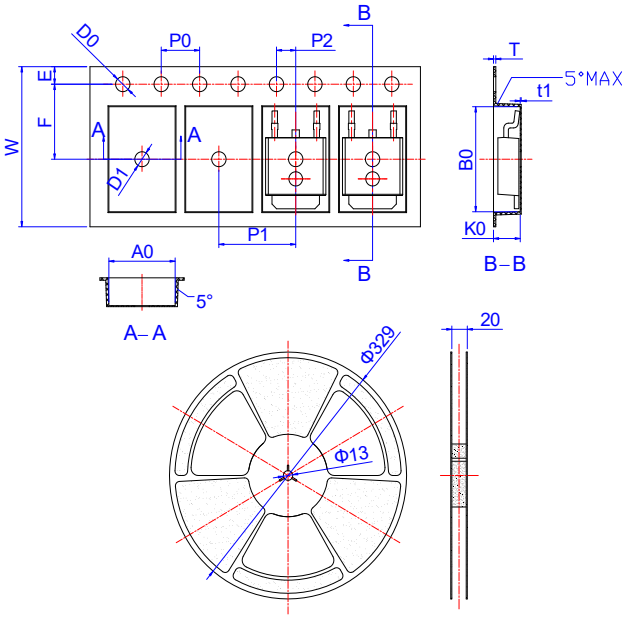
Package Mechanical Data



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°

Reel Spectification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TAPING	2,500	25,000	13inch

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