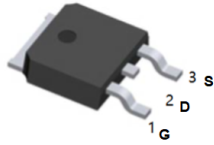
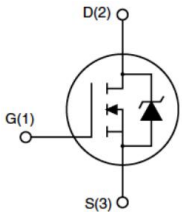


<p><b>General Description</b></p> <p>The STD10NF10 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.</p> <p><b>Features</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS} = 100V, I_D = 15A</math></li> <li>● <math>R_{DS(ON)}, 95\ m\ \Omega</math> (Typ) @ <math>V_{GS} = 10V</math></li> <li>● <math>R_{DS(ON)}, 100m\ \Omega</math> (Typ) @ <math>V_{GS} = 4.5V</math></li> <li>● Low Total Gate Charge</li> <li>● Low Reverse Transfer Capacitance</li> <li>● Improved dv/dt Capability</li> <li>● Fast Switching Speed</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Uninterruptible Power Supply(UPS)</li> <li>● Inverter System</li> </ul>	<div style="text-align: center;">  <p><b>TO-252(DPAK) top view</b></p> </div> <div style="text-align: center; margin-top: 20px;">  </div>
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**Absolute Maximum Ratings( $T_A=25^\circ C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	TC=25 $^\circ C$	15
		TC=100 $^\circ C$	10
Drain Current-Pulsed <sup>Note2</sup>	$I_{DM}$	60	A
Maximum Power Dissipation	$P_D$	55	W
Storage Temperature Range	$T_{STG}$	-55 to +175	$^\circ C$
Operating Junction Temperature Range	$T_J$	-55 to +175	$^\circ C$

**Thermal Resistance**

Parameter	Symbol	Min.	Typ.	Max	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	2.72	-	$^\circ C/W$

Electrical Characteristics(T<sub>J</sub>=25°C unless otherwise noted)

OFF CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =250uA	100	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	-	-	1	uA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA

ON CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250uA	1.0	1.6	3.0	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>DS</sub> =10A	-	95	110	mΩ
		V <sub>GS</sub> =4.5V, I <sub>DS</sub> =5A	-	100	130	
Forward Transconductance	g <sub>FS</sub>	V <sub>GS</sub> =5V, I <sub>DS</sub> =4A	2	-	-	S

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V, f=1MHz	-	632	-	pF
Output Capacitance	C <sub>oss</sub>		-	37	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	21	-	

SWITCHING CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, R <sub>L</sub> =2.8Ω, R <sub>GEN</sub> =6Ω, I <sub>D</sub> =10A	-	12.6	-	ns
Rise Time	t <sub>r</sub>		-	6	-	
Turn-Off Delay Time	T <sub>d(off)</sub>		-	32.5	-	
Fall Time	t <sub>f</sub>		-	4.3	-	
Total Gate Charge at 10V	Q <sub>g</sub>	V <sub>DS</sub> =80V, I <sub>DS</sub> =10A, V <sub>GS</sub> =10V	-	19.2	-	nC
Gate to Source Gate Charge	Q <sub>gs</sub>		-	3.4	-	
Gate to Drain "Miller" Charge	Q <sub>gd</sub>		-	6.1	-	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =10A	-	-	1.2	V

Notes 1. The maximum current rating is package limited.

Notes 2. Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3. EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=50V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω

Typical Performance Characteristics

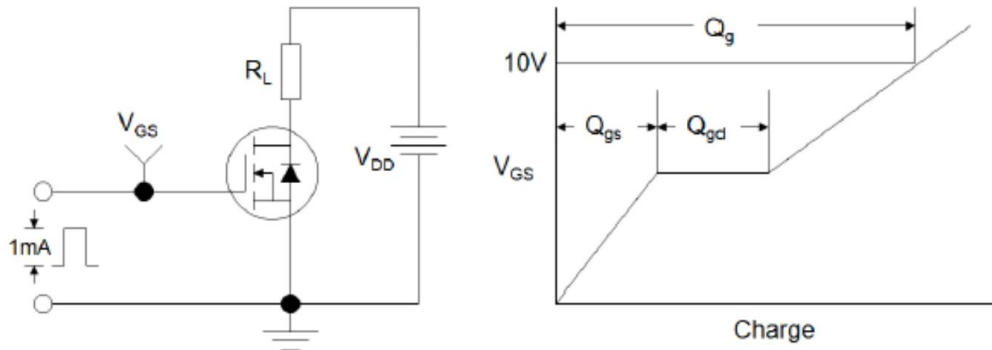


Figure1: Gate Charge Test Circuit & Waveform

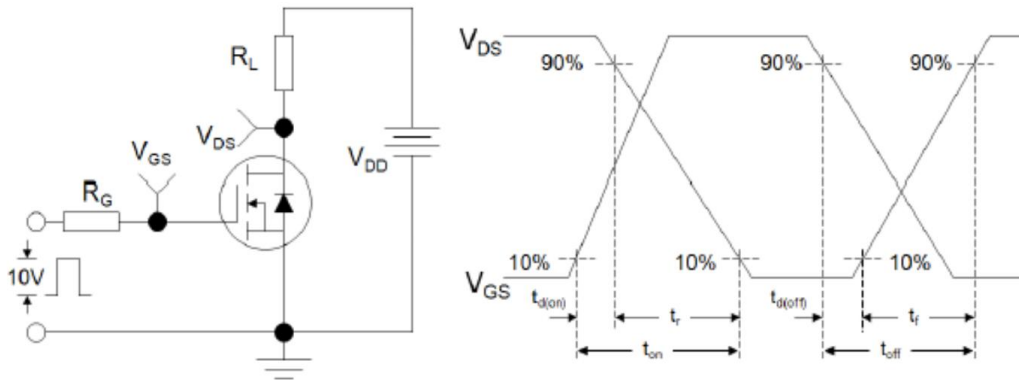


Figure 2: Resistive Switching Test Circuit & Waveforms

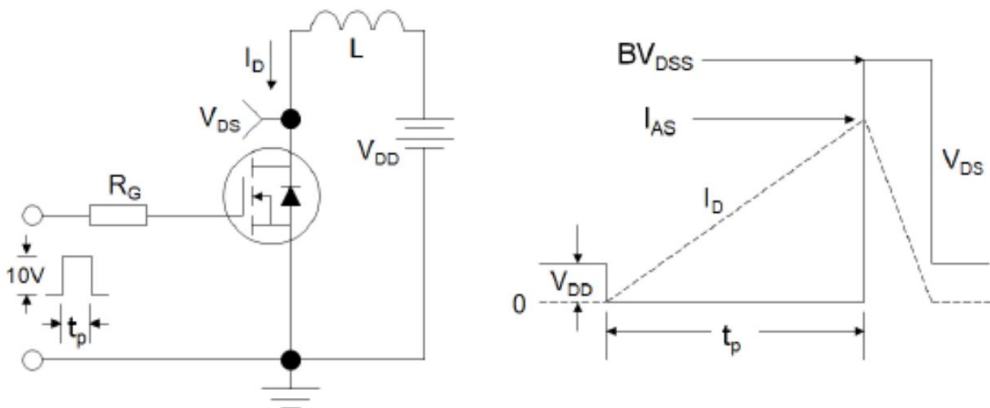


Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

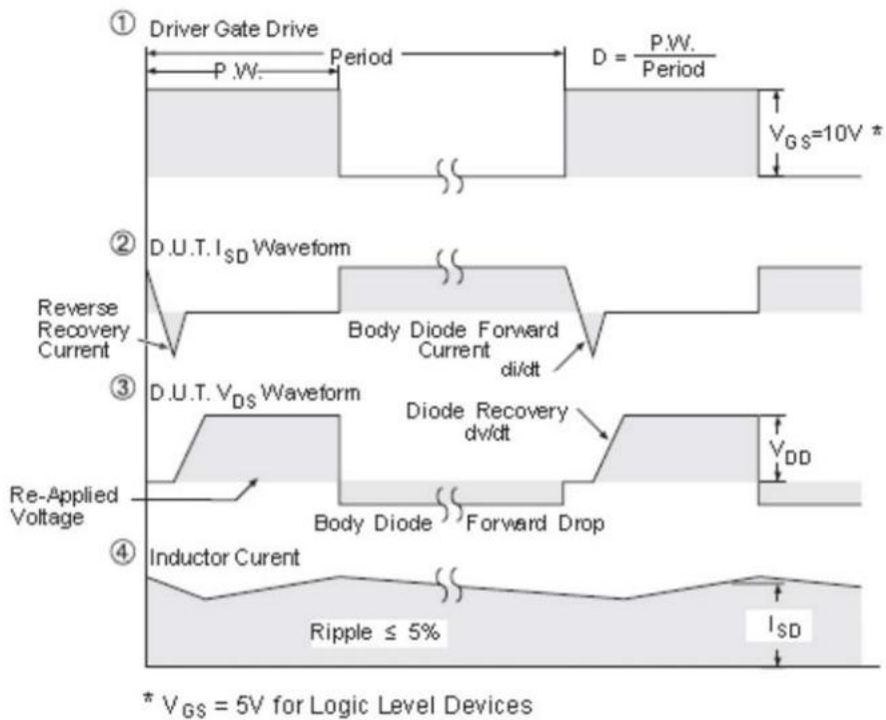
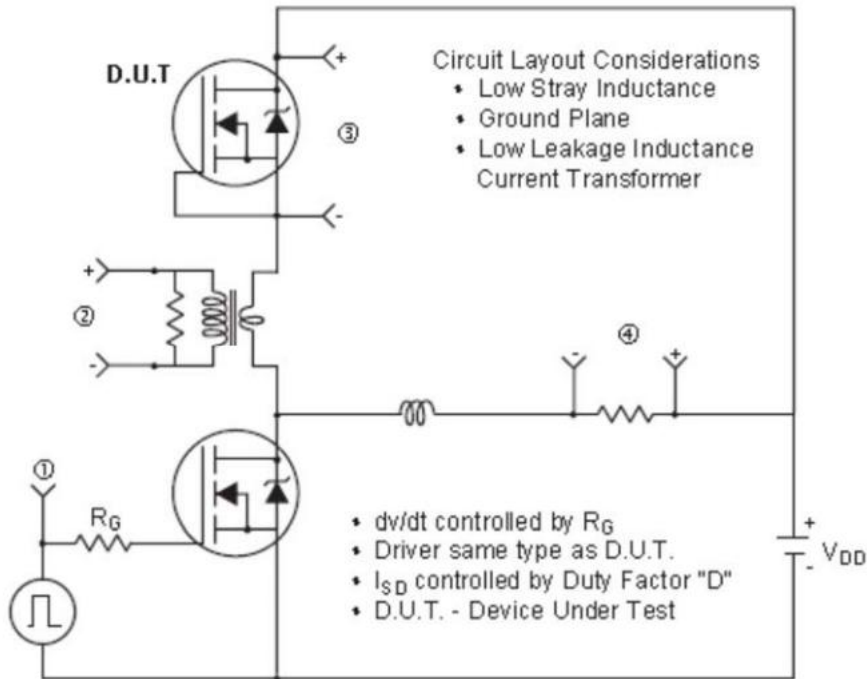
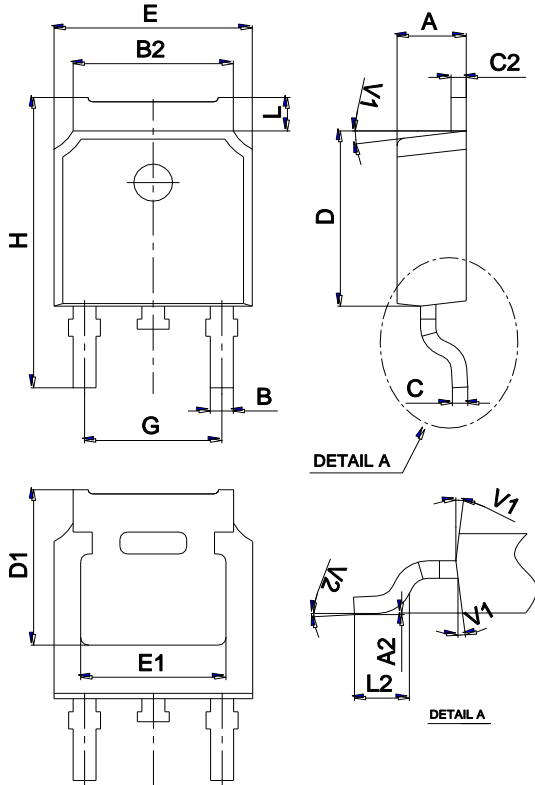


Figure 4: Peak Diode Recovery  $dv/dt$  Test Circuit & Waveforms (For N-channel)

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°

Ordering information

Order code	Package	Baseqty	Delivery mode
STD10NF10L	TO-252	2500	Tape and reel