

- ★ Super Low Gate Charge
- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

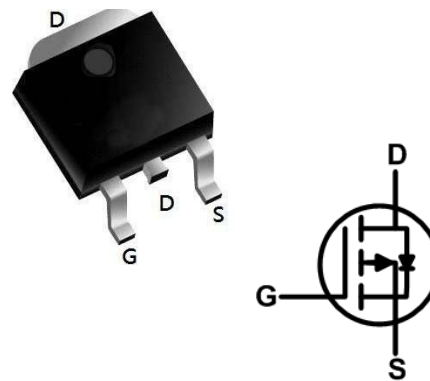
Product Summary


BVDSS	RDSON	ID
-100V	59mΩ	-18A

Description

The XXW18P10 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The XXW18P10 meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration

Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	-100	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C = 25°C	I _D	-18	A
	T _C = 100°C		-11	
Pulsed Drain Current ¹		I _{DM}	-72	A
Single Pulse Avalanche Energy ²		EAS	42	mJ
Total Power Dissipation	T _C = 25°C	P _D	102	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	R _{θJA}	91	°C/W
Thermal Resistance from Junction-to-Case	R _{θJC}	1.22	°C/W

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V_{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100	-	-	V
Gate-body Leakage current		I_{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J = 25°C	I_{DSS}	V _{DS} = -100V, V _{GS} = 0V	-	-	-1	μA
	T _J = 100°C			-	-	-20	
Gate-Threshold Voltage		V_{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.5	-2	-2.5	V
Drain-Source On-Resistance ⁴		R_{DS(on)}	V _{GS} = -10V, I _D = -10A	-	59	70	mΩ
			V _{GS} = -4.5V, I _D = -6A	-	120	150	
Forward Transconductance ⁴		g_{fs}	V _{DS} = -10V, I _D = -10A	-	28	-	S
Dynamic Characteristics⁵							
Input Capacitance		C_{iss}	V _{DS} = -50V, V _{GS} = 0V, f = 1MHz	-	2859	-	pF
Output Capacitance		C_{oss}		-	93	-	
Reverse Transfer Capacitance		C_{rss}		-	68	-	
Gate Resistance		R_g	f = 1MHz	-	4.3	-	Ω
Switching Characteristics⁵							
Total Gate Charge		Q_g	V _{GS} = -10V, V _{DS} = -50V, I _D = -10A	-	53	-	nC
Gate-Source Charge		Q_{gs}		-	12	-	
Gate-Drain Charge		Q_{gd}		-	10	-	
Turn-On Delay Time		t_{d(on)}	V _{GS} = -10V, V _{DD} = -50V, R _G = 3Ω, I _D = -10A	-	8	-	ns
Rise Time		t_r		-	27	-	
Turn-Off Delay Time		t_{d(off)}		-	155	-	
Fall Time		t_f		-	77	-	
Body Diode Reverse Recovery Time		t_{rr}	I _F = -10A, dI/dt = 100A/μs	-	36	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	40	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V_{SD}	I _S = -10A, V _{GS} = 0V	-	-0.9	-1.3	V
Continuous Source Current	T _C = 25°C	I_S	-	-	-	25	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°C.
2. The EAS data shows Max. rating. The test condition is V_{DD} = -35V, V_{GS} = -10V, L = 0.5mH, I_{AS} = -23A
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test..

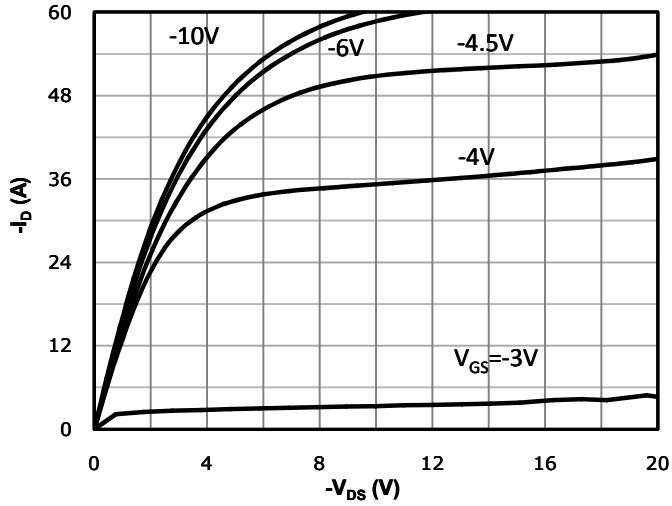
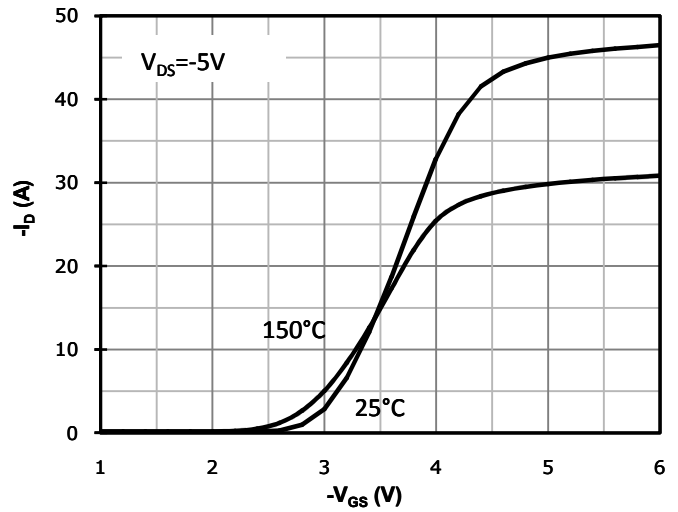
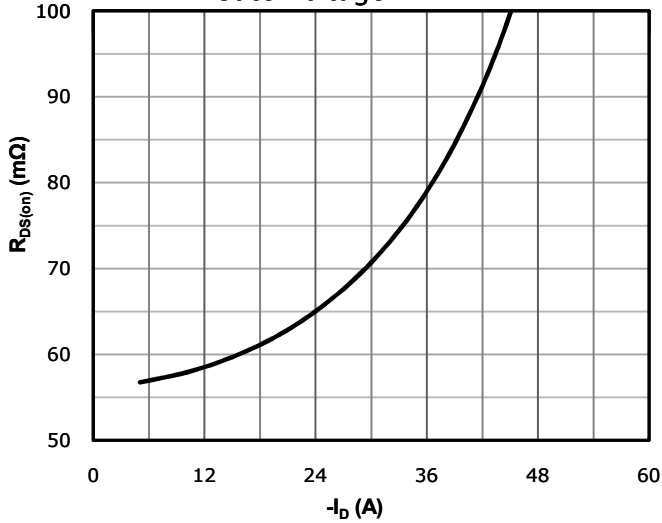
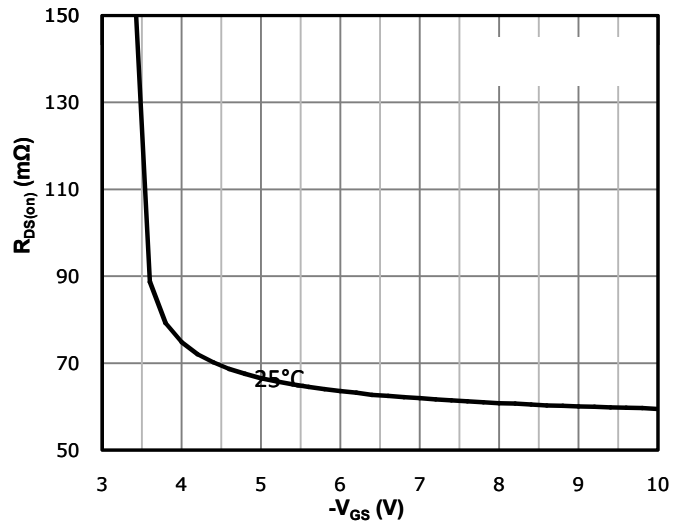
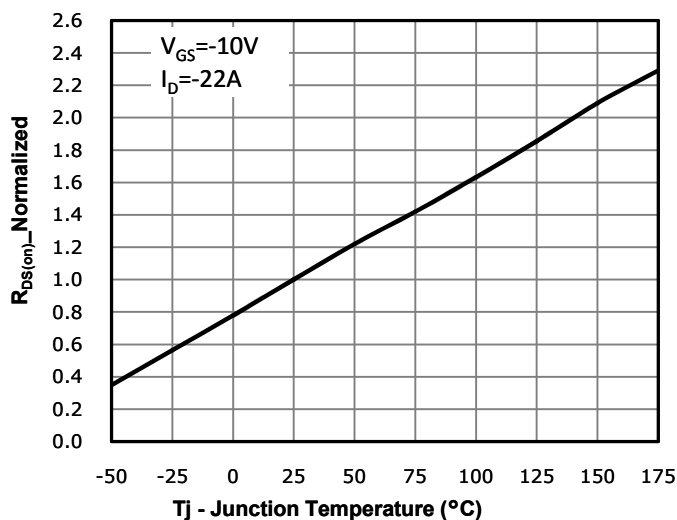
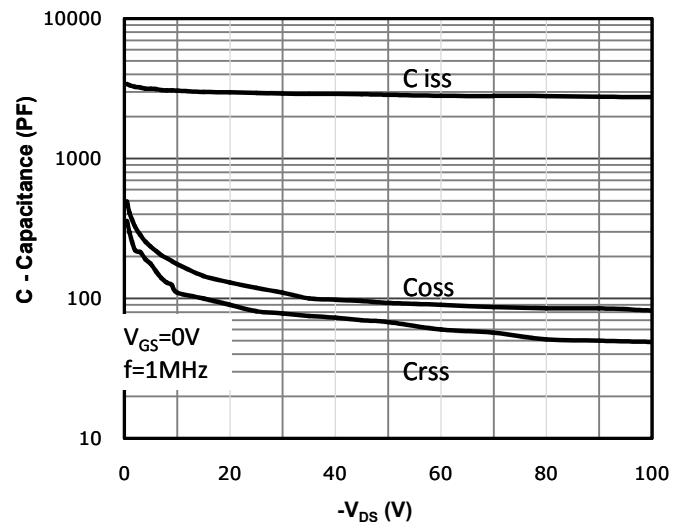
Typical Performance Characteristics
Fig 1: Output Characteristics

Fig 2: Transfer Characteristics

Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

Fig 4: $R_{DS(on)}$ vs Gate Voltage

Fig 5: $R_{DS(on)}$ vs. Temperature

Fig 6: Capacitance Characteristics


Fig 7: Gate Charge Characteristics

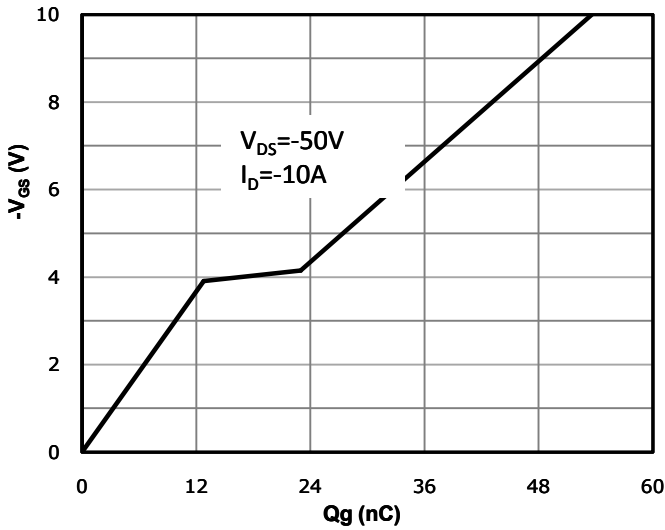


Fig 8: Body-diode Forward Characteristics

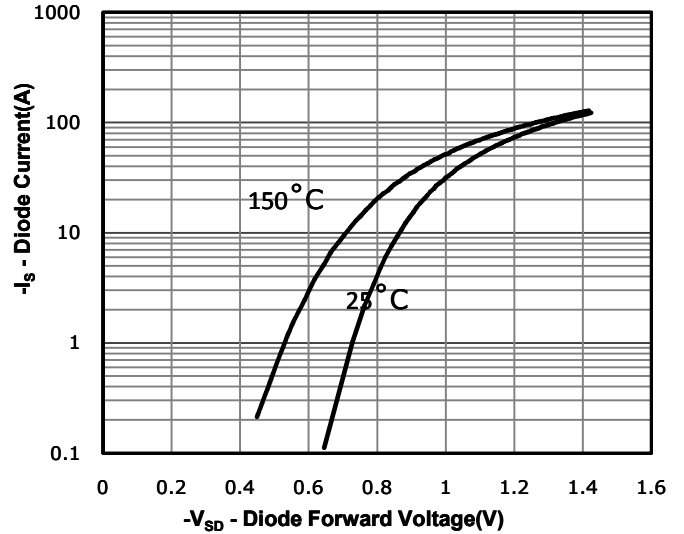


Fig 9: Power Dissipation

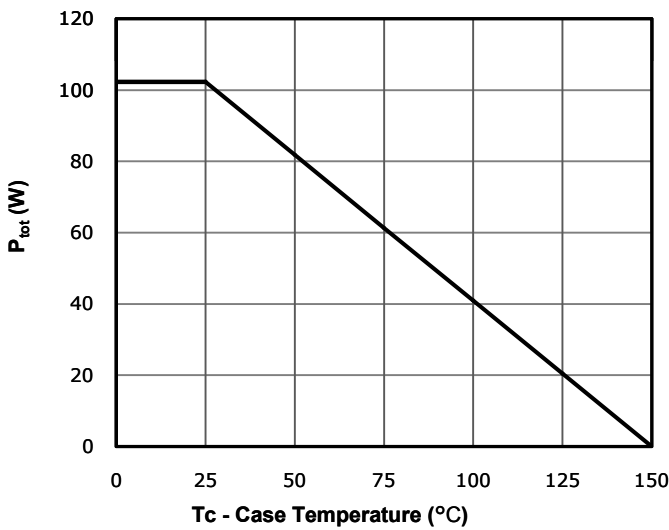


Fig 10: Drain Current Derating

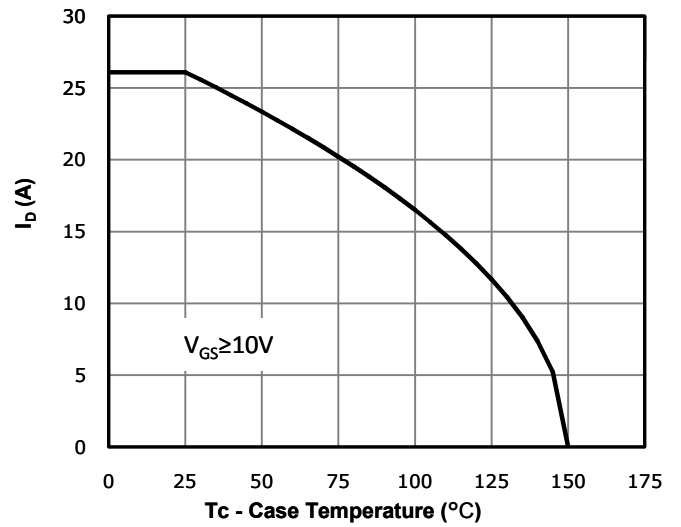


Fig 11: Safe Operating Area

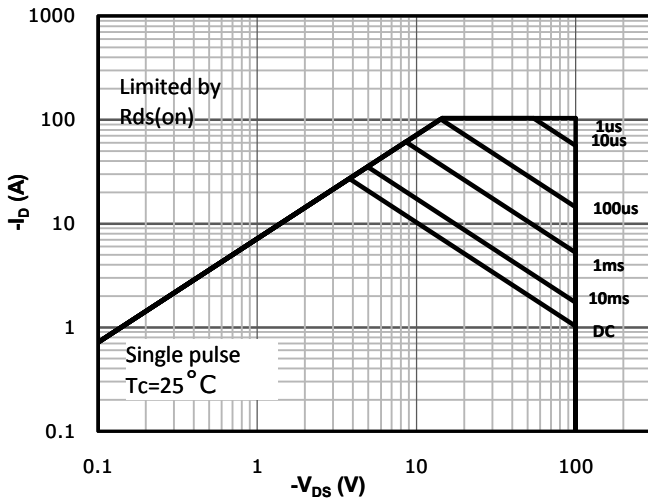
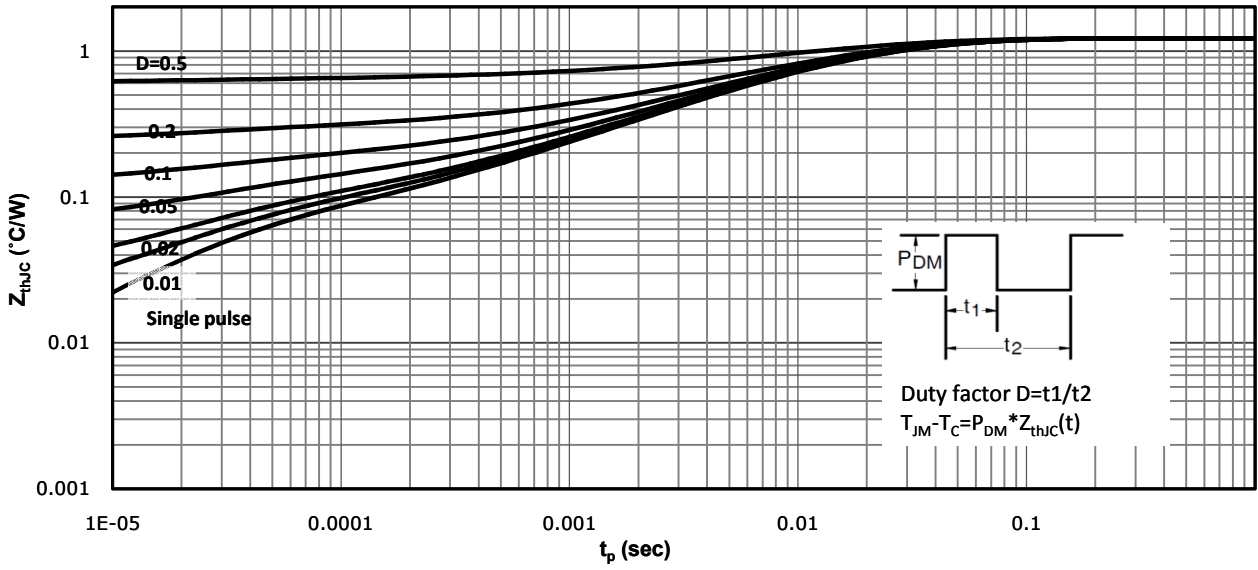
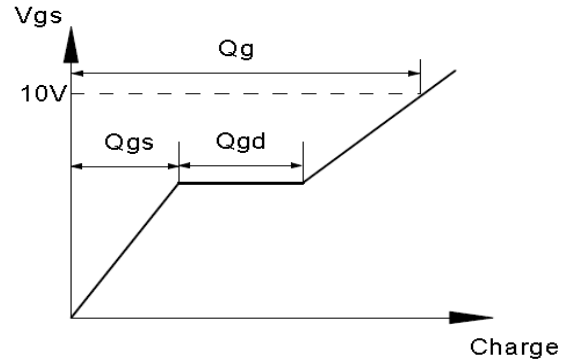
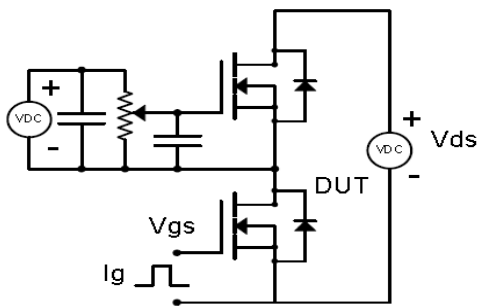


Fig 12: Max. Transient Thermal Impedance

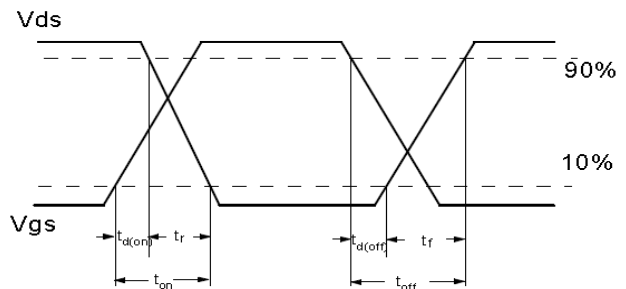
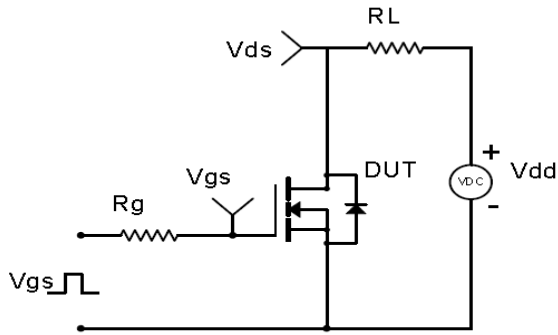


Test Circuit & Waveform

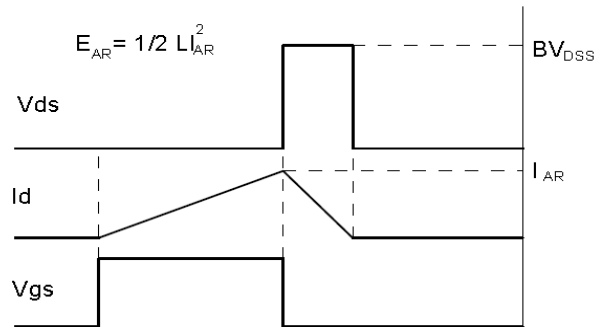
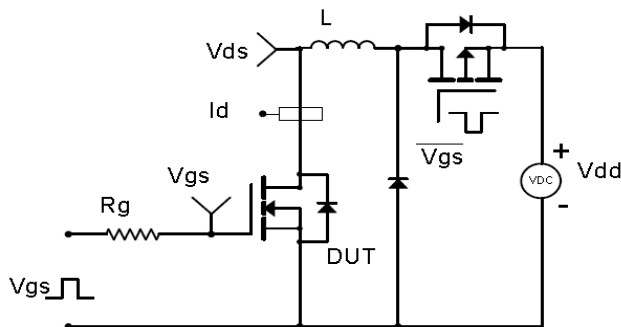
Gate Charge Test Circuit & Waveform



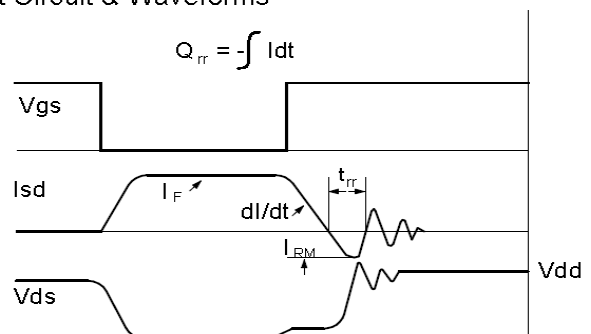
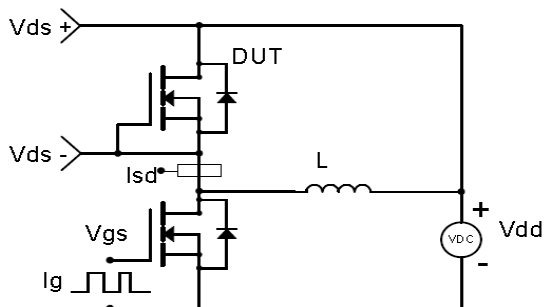
Resistive Switching Test Circuit & Waveforms

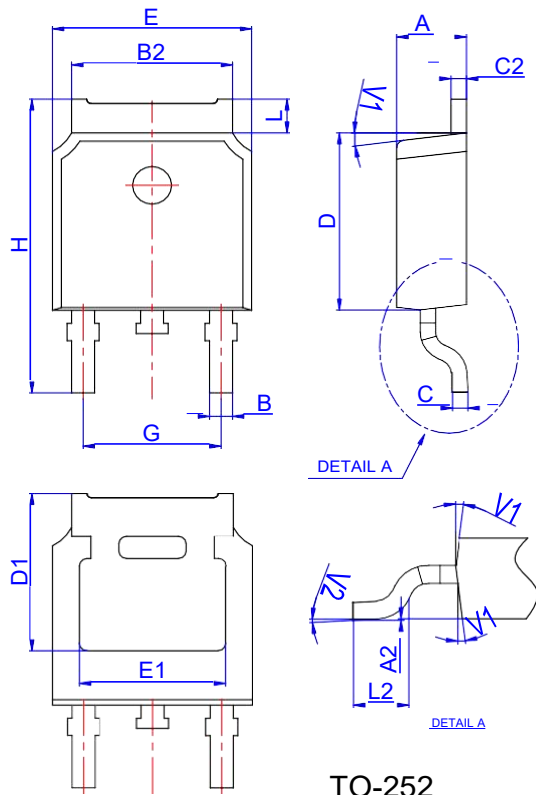


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

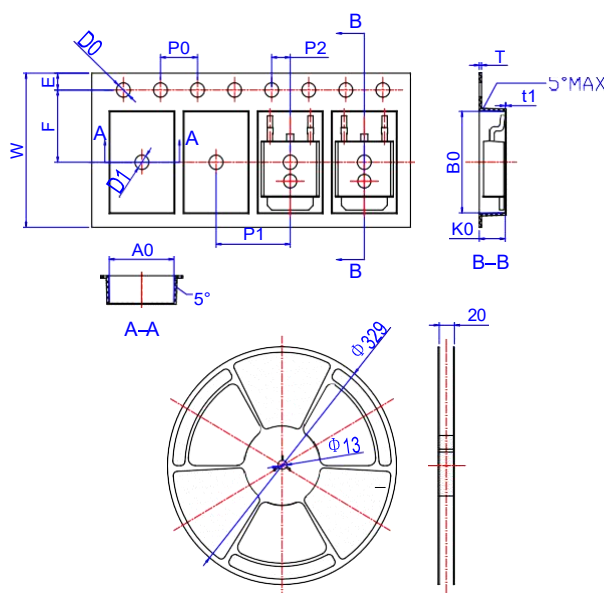


Diode Recovery Test Circuit & Waveforms



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 Specification-TO-252-4R


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