

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-40V$
- $I_D=-45A$
- $R_{DS(on)}@V_{GS}=-10V < 12m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 17m\Omega$
- 100% Avalanche Tested
- Voltage controlled small signal switch
- Advanced Trench Technology

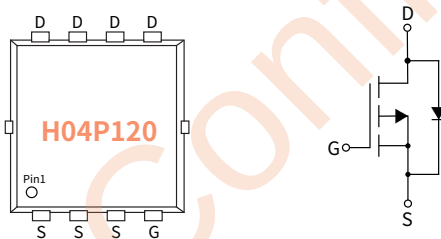
Applications

- Battery Protection
- Load Switch
- Uninterruptible Power Supply

Mechanical Data

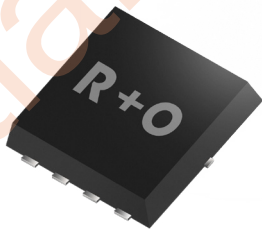
- Case: PDFN3030
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
-40 V
Drain Current
-45 Ampere

PDFN3030



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
PDFN3030	R3	0.0218	5000	10000	80000	13"

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-40
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-45
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-140
Total Power Dissipation	P_D	W	25
Single pulse avalanche energy ⁽²⁾	EAS	mJ	90
Junction temperature	T_J	°C	150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	5

● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	V	-40	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	μA	—	—	-1.0
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	V	-1.0	-1.6	-2.5
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} = -10V, I _D =-15A	mΩ	—	8.6	12
		V _{GS} = -4.5V, I _D =-10A		—	12.5	17

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f=1MHZ	pF	—	2160	—
Output Capacitance	C _{oss}			—	270	—
Reverse Transfer Capacitance	C _{rss}			—	237	—

● Switching Parameters

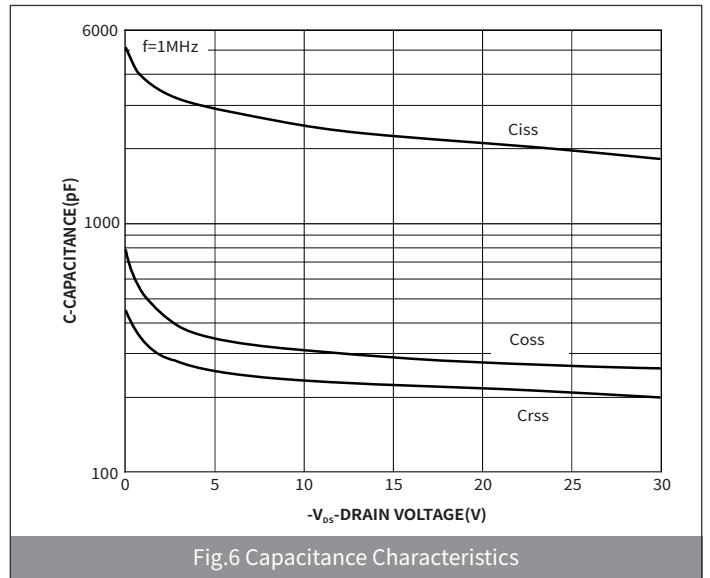
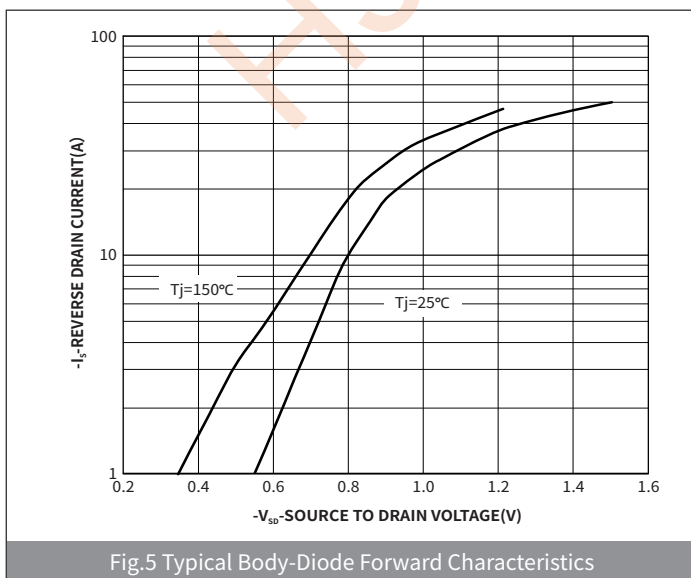
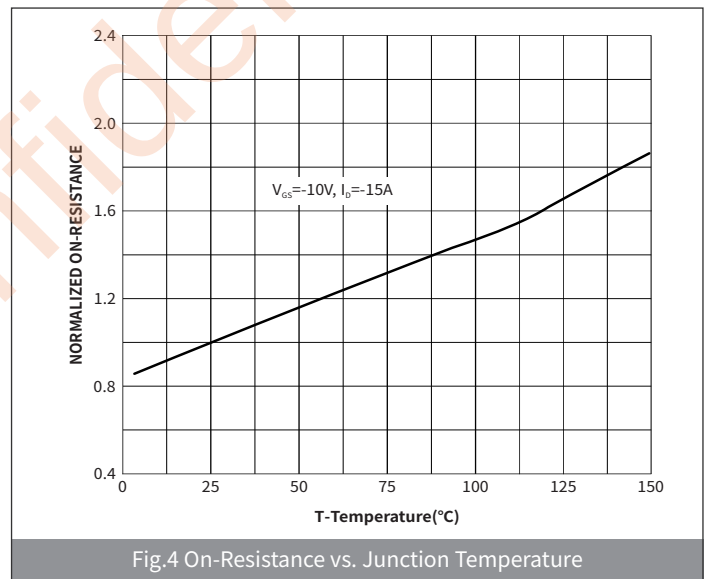
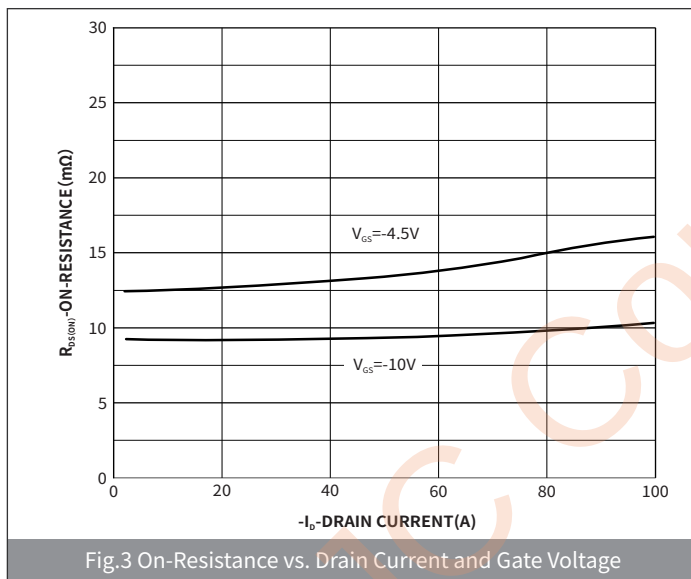
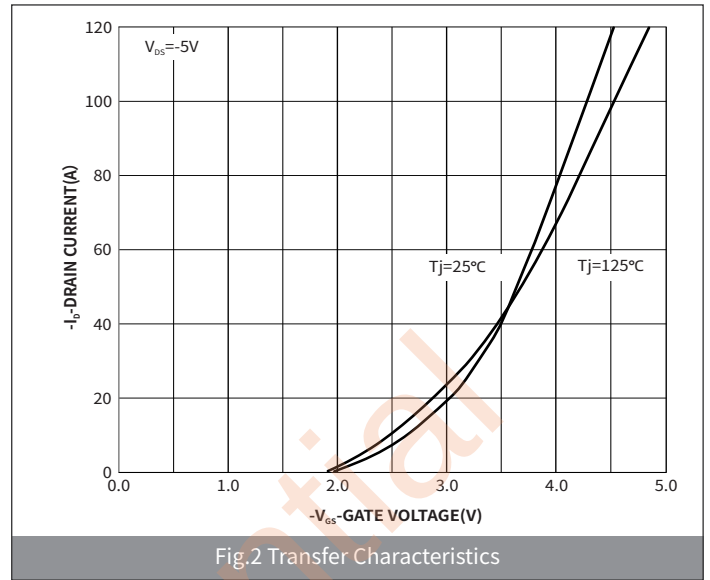
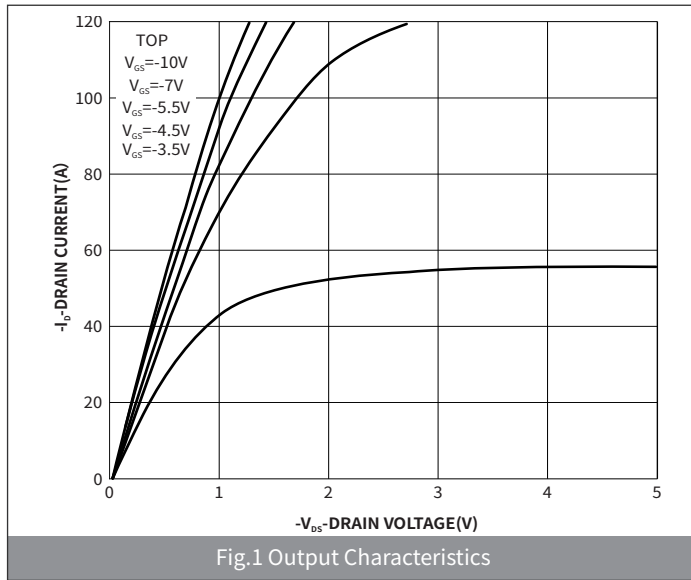
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-20V, I _D =-10A, R _{GEN} =2.5Ω	nS	—	10	—
Turn-on Rise Time	t _r		nS	—	20	—
Turn-off Delay Time	t _{D(off)}		nS	—	51	—
Turn-off fall Time	t _f		nS	—	28	—
Total Gate Charge	Q _g	V _{DS} =-20V, I _D =-10A V _{GS} =-10V	nC	—	35	—
Gate-Source Charge	Q _{gs}		nC	—	6.2	—
Gate-Drain Charge	Q _{gd}		nC	—	7.3	—

● Drian-Source Diode Characteristics

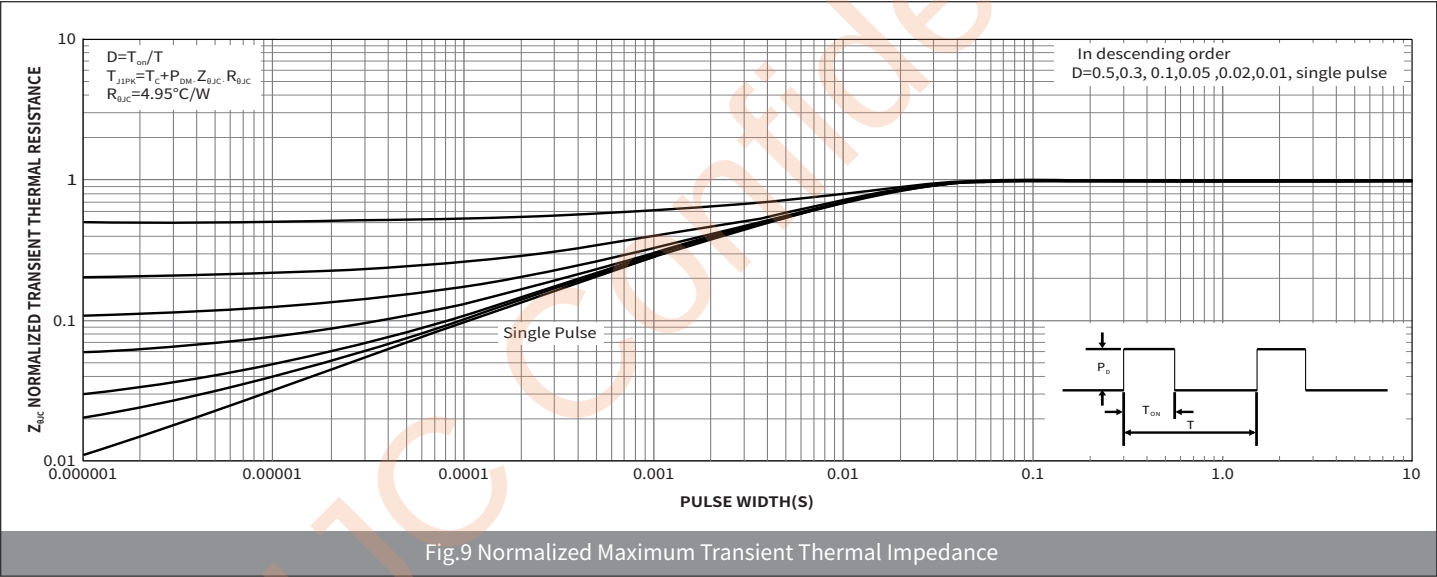
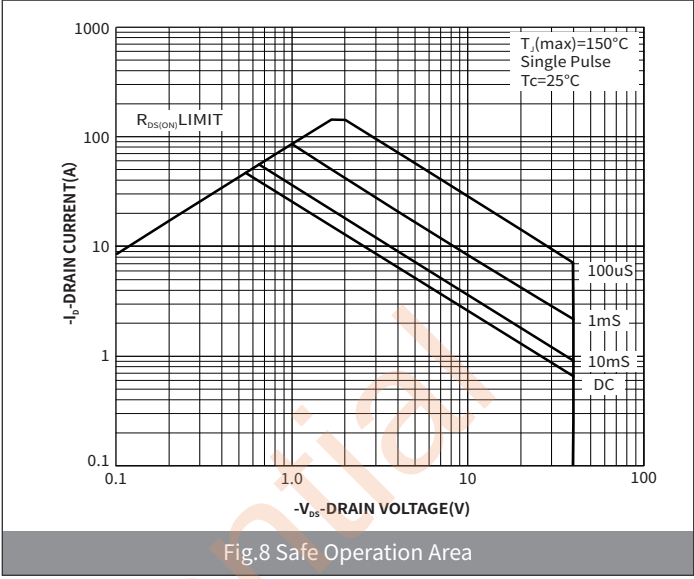
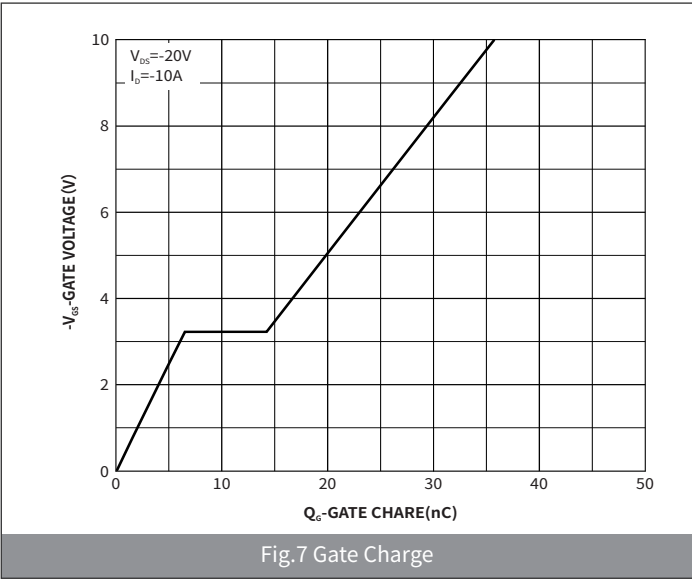
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =-45A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	-45

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=-20V,VG=-10V,L=0.5mH,IAS=-19A,Rg=25Ω .
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

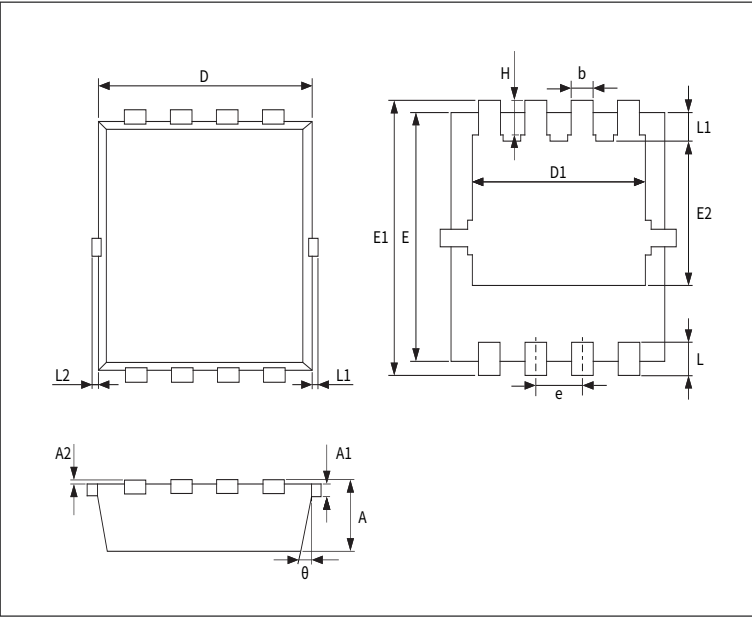
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



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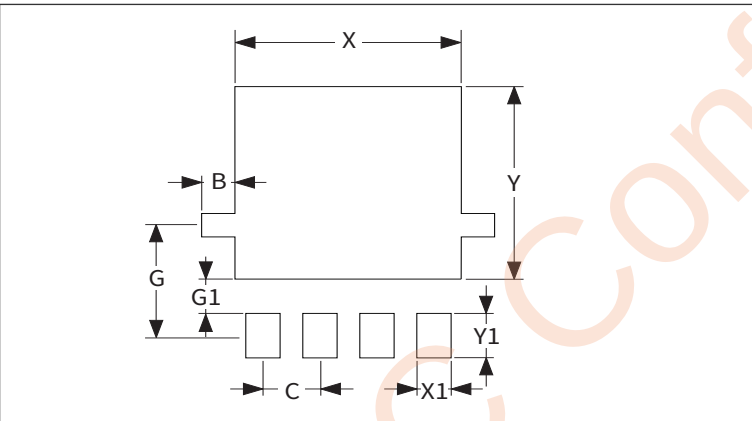


● Package Outline Dimensions (PDFN3030)



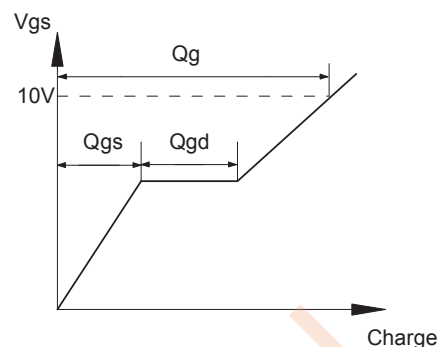
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.900	0.026	0.035
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.90	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.200	0.114	0.126
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

● Suggested Pad Layout

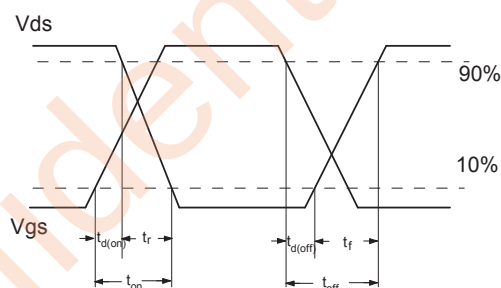
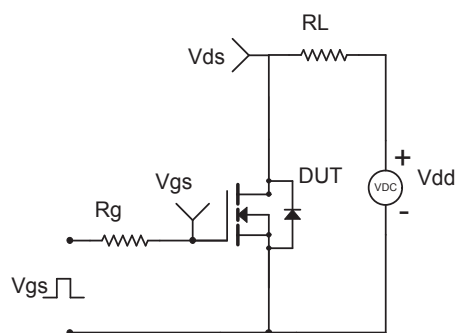


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
B	0.34	0.36	0.013	0.014
C	0.55	0.75	0.022	0.030
G	1.35	1.55	0.054	0.062
G1	0.37	0.57	0.014	0.022
X	2.55	2.75	0.102	0.110
X1	0.30	0.50	0.012	0.020
Y	2.40	2.60	0.096	0.102
Y1	0.46	0.66	0.018	0.026

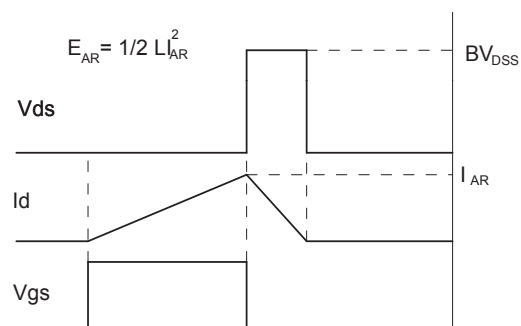
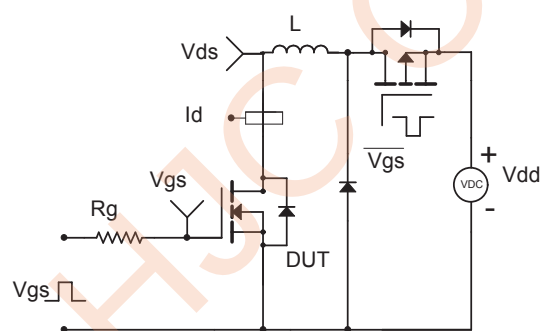
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4. Diode Recovery Test Circuit & Waveforms

