Description

The SD4953BDY provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.
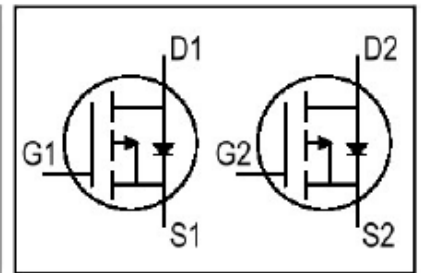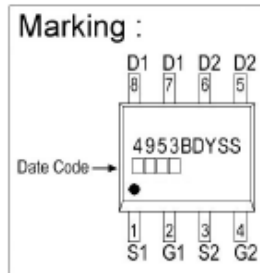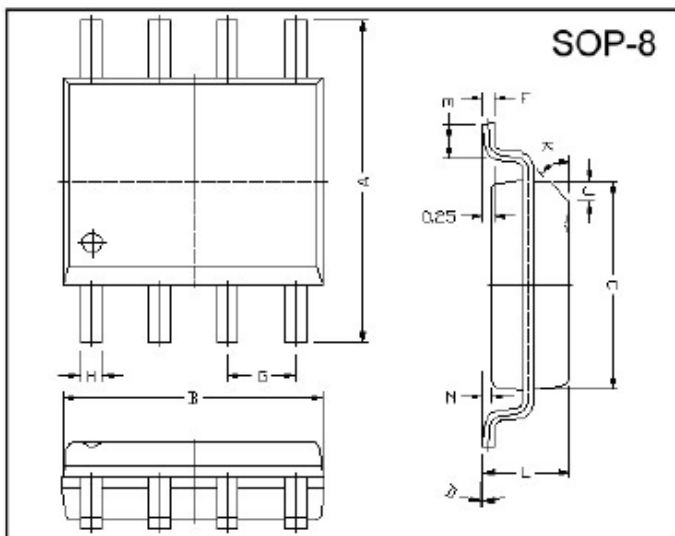
The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

Features

* Simple Drive Requirement

* Lower on-resistance

* Fast Switching

BV$_{DSS}$	- 30 V
R$_{DS(ON)}$	42 mΩ
I$_D$	- 5 A

Package Dimensions

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	M	0.10	0.25
B	4.80	5.00	H	0.35	0.49
C	3.80	4.00	L	1.35	1.75
D	0°	8°	J	0.375 REF.	
E	0.40	0.90	K	45°	
F	0.19	0.25	G	1.27 TYP.	

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V$_{DS}$	-30	V
Gate-Source Voltage	V$_{GS}$	+/- 20	V
Continuous Drain Current [1]	I$_D$ @T$_A$=25℃	-5	A
Continuous Drain Current [1]	I$_D$ @T$_A$=70℃	-4	A
Pulsed Drain Current [2]	I$_{DM}$	-20	A
Total Power Dissipation [1]	P$_D$ @T$_A$=25℃	2	W
Linear Derating Factor		0.02	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+150	℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient [1]　　Max.	Rthj-amb	62.5	℃/W

Electrical Characteristics (Tj = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0$, $I_D=-250uA$
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	-	-2.5	V	$V_{DS}=V_{GS}$, $I_D=-250uA$
Forward Transconductance[2]	g_{fs}	-	5	-	S	$V_{DS}=-5V$, $I_D=-5A$
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	$V_{GS}=±20V$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	uA	$V_{DS}=-24V$, $V_{GS}=0$
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	42	mΩ	$V_{GS}=-10V$, $I_D=-5A$
		-	-	70		$V_{GS}=-4.5V$, $I_D=-4A$
Total Gate Charge[2]	Q_g	-	11.7	-	nC	$I_D=-5A$ $V_{DS}=-15V$ $V_{GS}=-10V$
Gate-Source Charge	Q_{gs}	-	2.1	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	2.9	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	9	-	ns	$V_{DS}=-15V$ $I_D=-1A$ $V_{GS}=-10V$ $R_G=6Ω$ $R_D=15Ω$
Rise Time	T_r	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	37	-		
Fall Time	T_f	-	23	-		
Input Capacitance	C_{iss}	-	582	-	pF	$V_{GS}=0V$ $V_{DS}=-15V$ $f=1.0MHz$
Output Capacitance	C_{oss}	-	125	-		
Reverse Transfer Capacitance	C_{rss}	-	86	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-0.84	-1.2	V	$I_S=-1.7A$, $V_{GS}=0V$

Notes: 1. Surface Mounted on FR4 Board, t≦10sec.

2. Pulse width≦300us, duty cycle≦2%.

Characteristics Curve

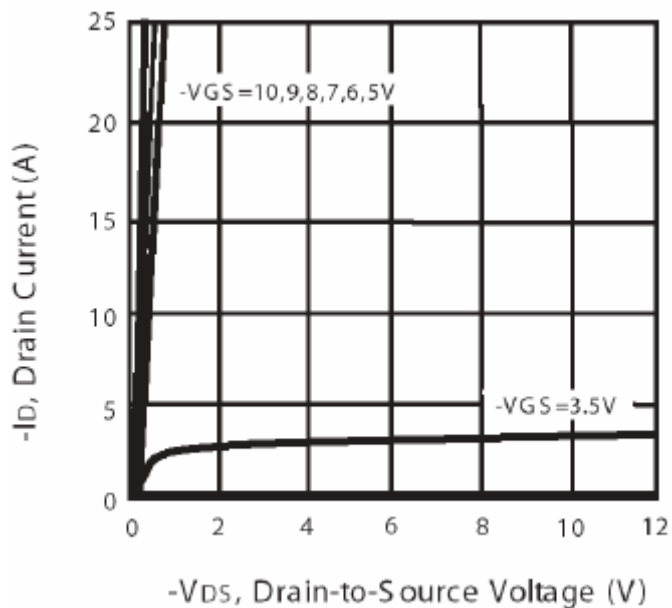### Fig 1. Typical Output Characteristics
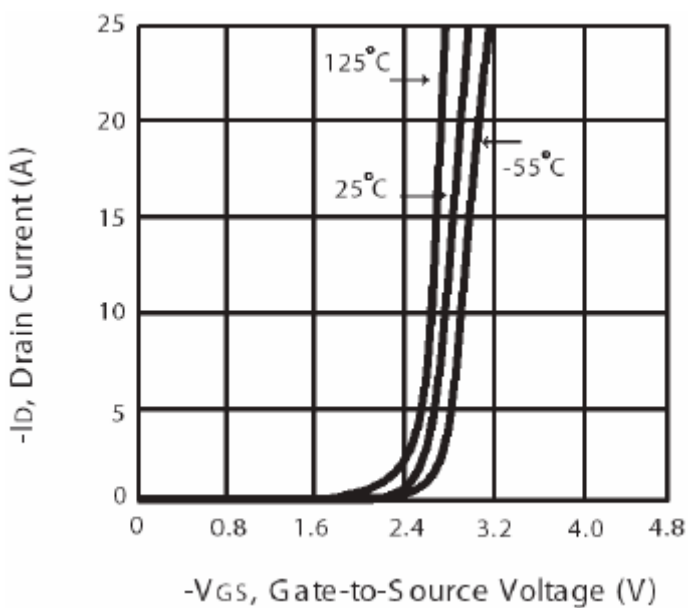
Fig 2. Transfer Characteristics

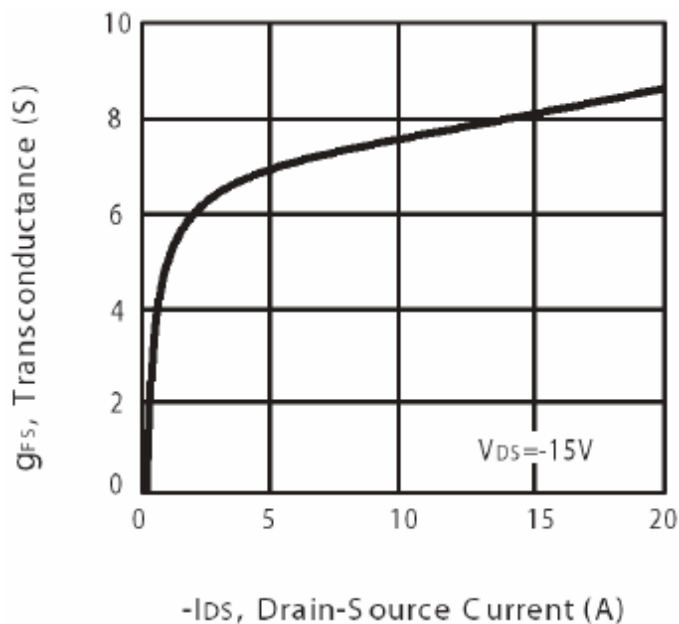### Fig 3. Transconductance v.s. Drain Current

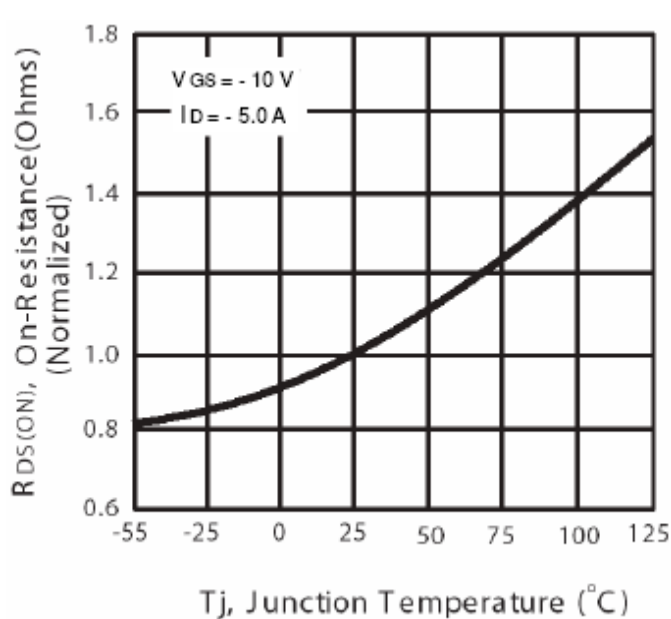### Fig 4. On-Resistance v.s. Junction Temperature
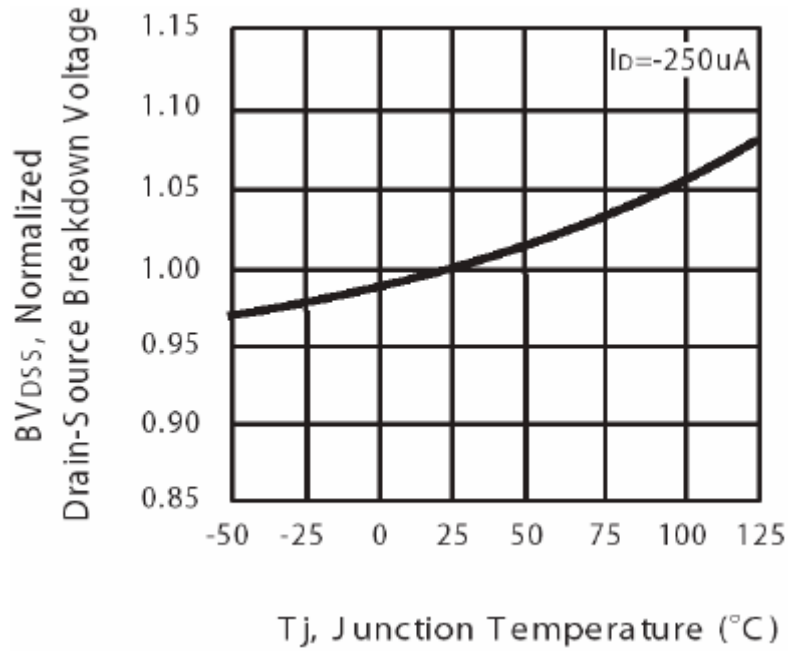
Fig 5. Breakdown Voltage v.s. Junction Temperature

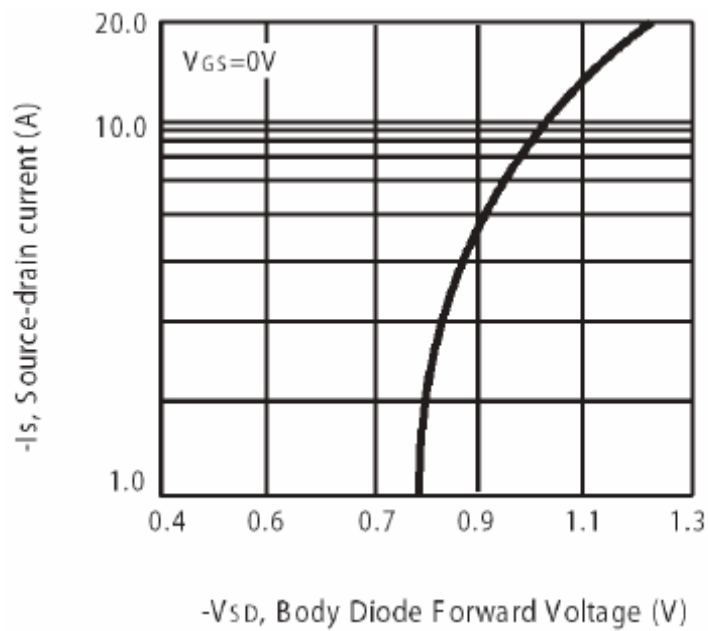**Fig 6. Body Diode Forward Voltage v.s. Source Current**
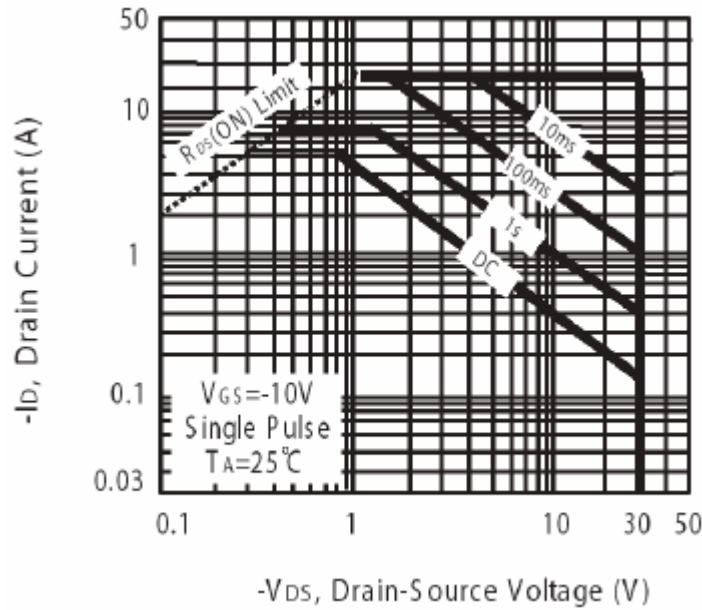
Fig 7. Maximum Safe Operating Area

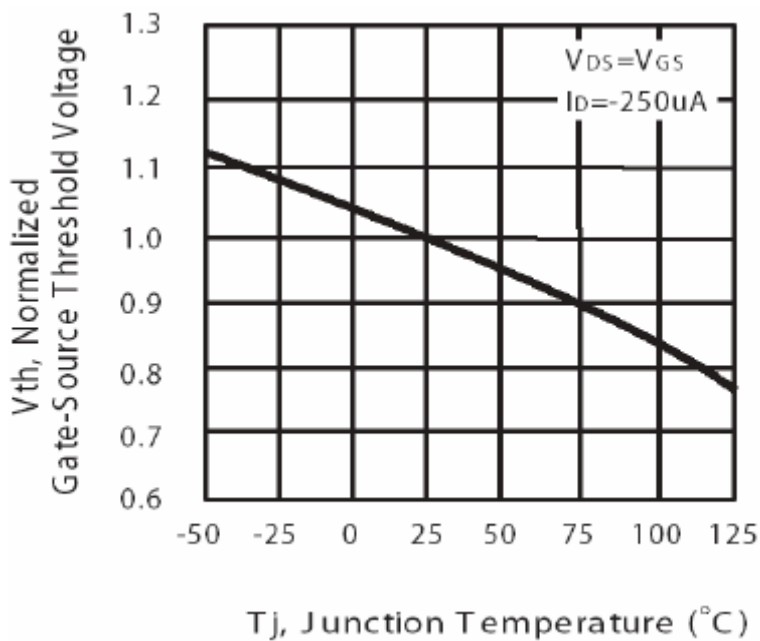**Fig 8. Gate Threshold Voltage v.s. Junction Temperature**

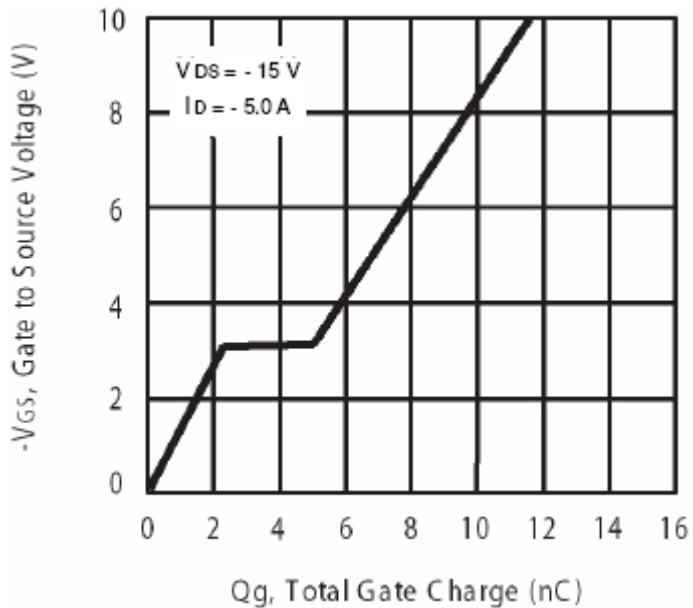**Fig 9. Gate Charge Characteristics**

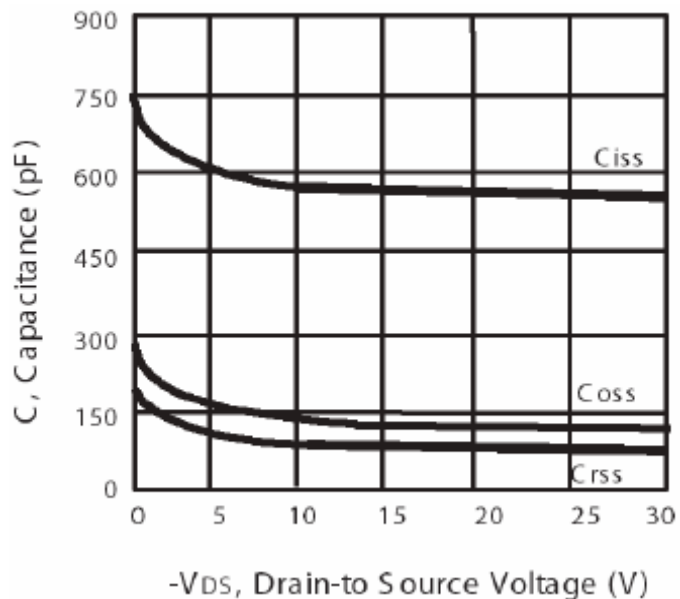**Fig 10. Typical Capacitance Characteristics**

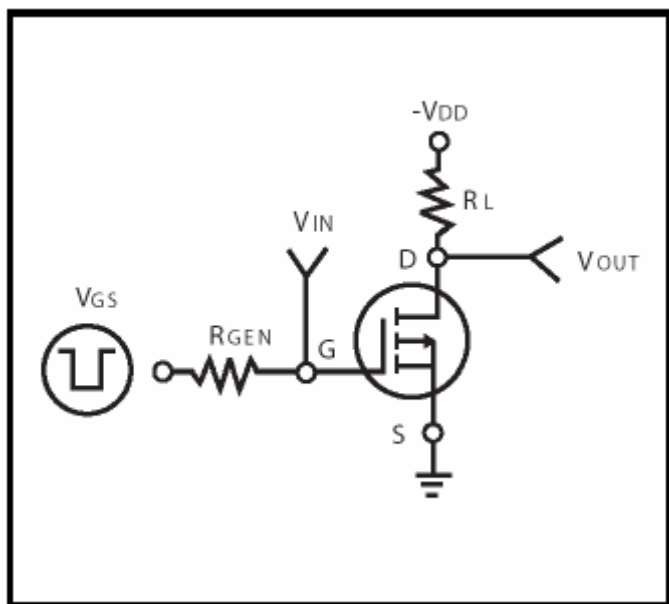**Fig 11. Switching Time Circuit**

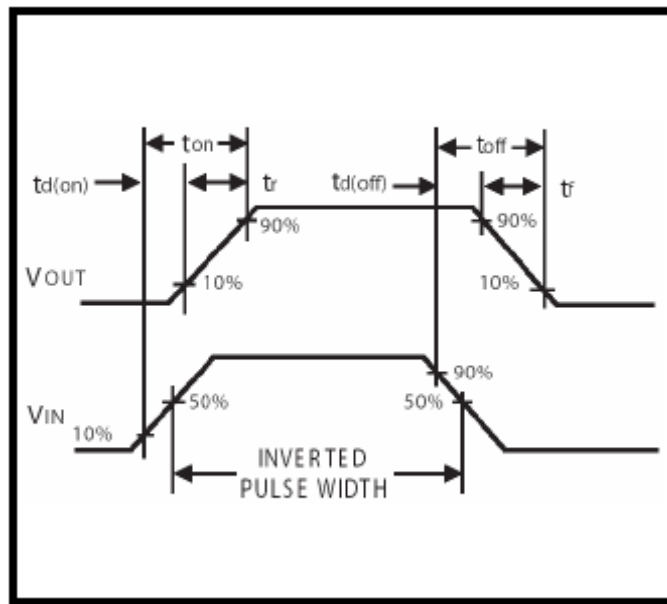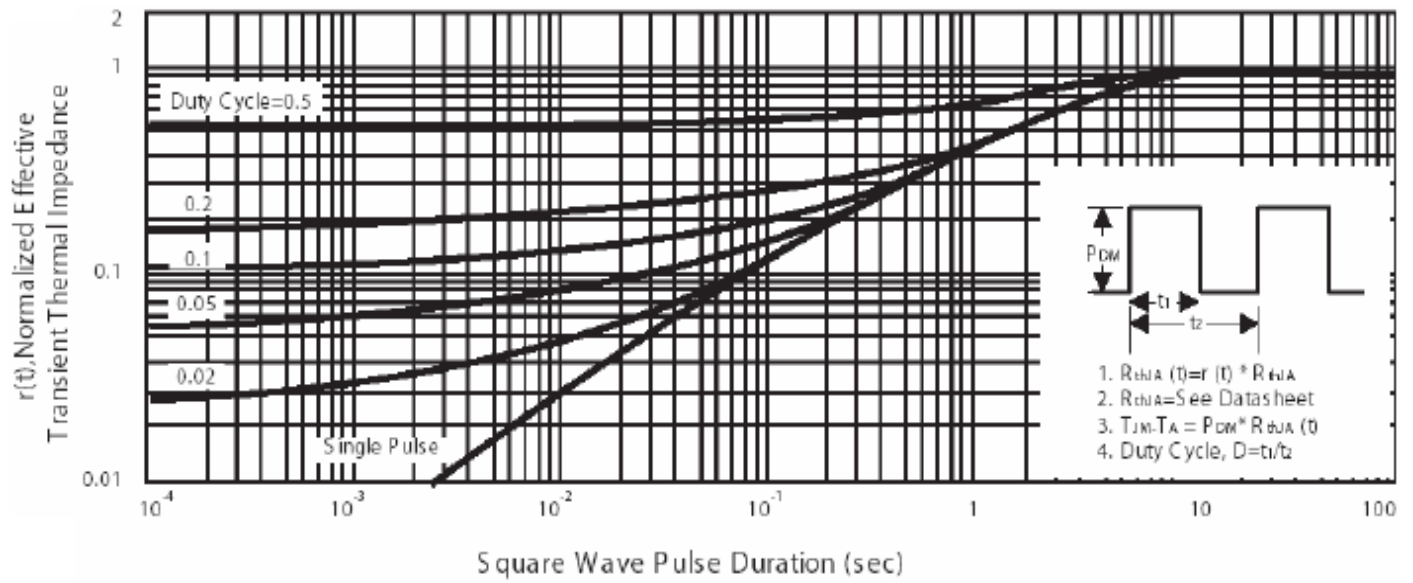**Fig 12. Switching Time Waveform**

Fig 13. Normalized Thermal Transient Impedance Curve

1. $R_{thJA}(t) = r(t) * R_{thJA}$
2. R_{thJA} = See Datasheet
3. $T_{JM} - T_A = P_{DM} * R_{thJA}(t)$
4. Duty Cycle, $D = t_1/t_2$