Description

The MT4953 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

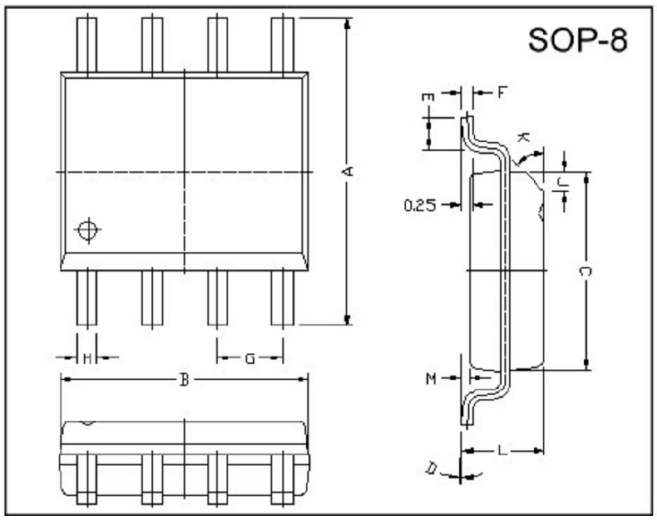
***** Simple Drive Requirement

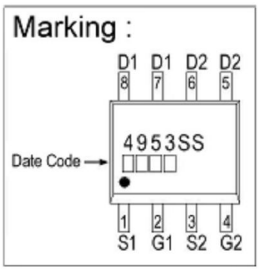
***** Lower on-resistance

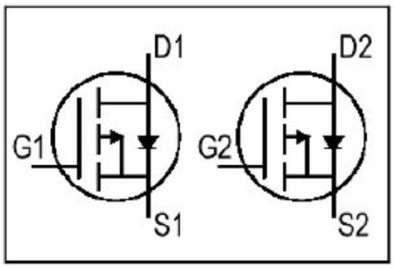
***** Fast Switching

BV_{DSS}	**- 30 V**
$R_{DS(ON)}$	**53 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}	+/- 16	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/℃
o perating 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}= ±16V
Drain-Source Leakage Current	I_{DSS}	-	-	-1	uA	V_{DS}=-24V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	53	mΩ	V_{GS}=-10V, I_D=-5A
		-	-	90		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

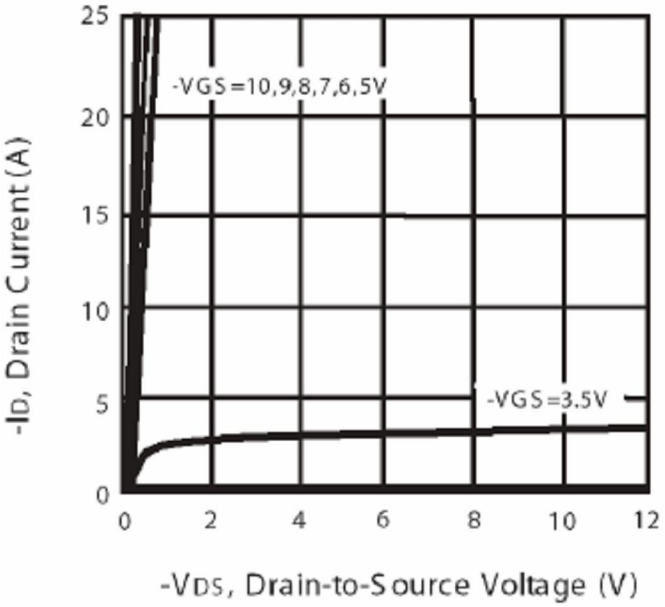


Fig 2. Transfer Characteristics

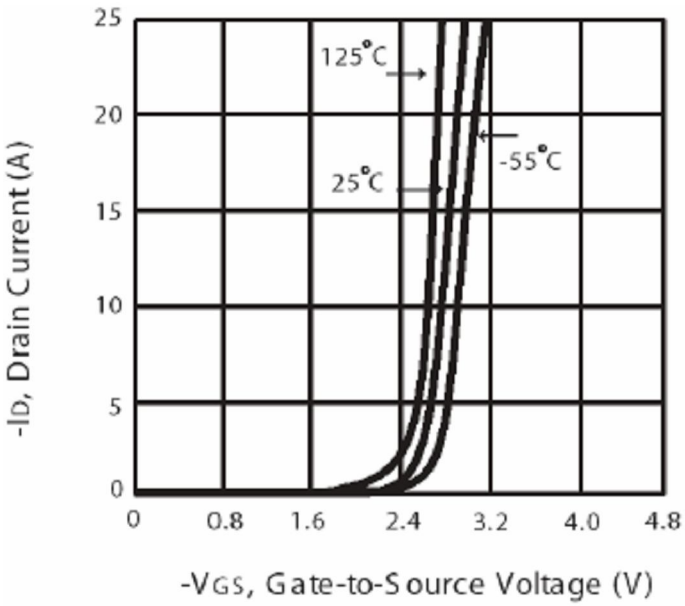


Fig 3. Transconductance v.s. Drain Current

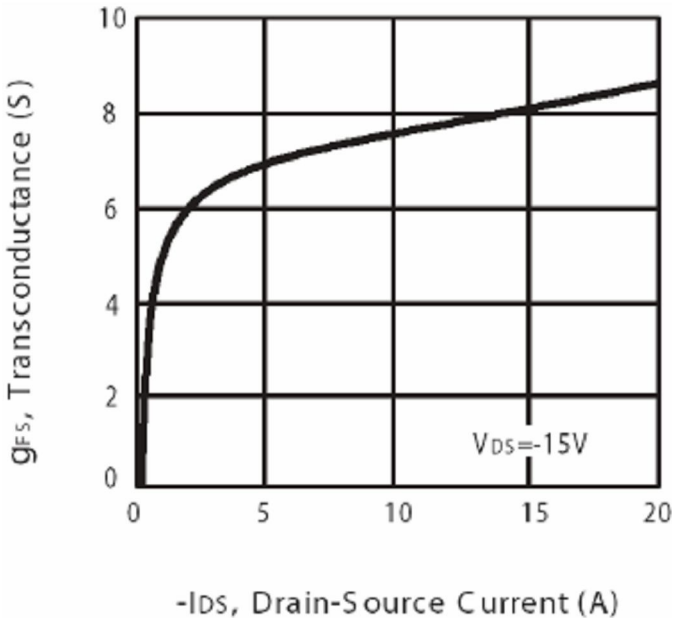


Fig 4. On-Resistance v.s. Junction Temperature

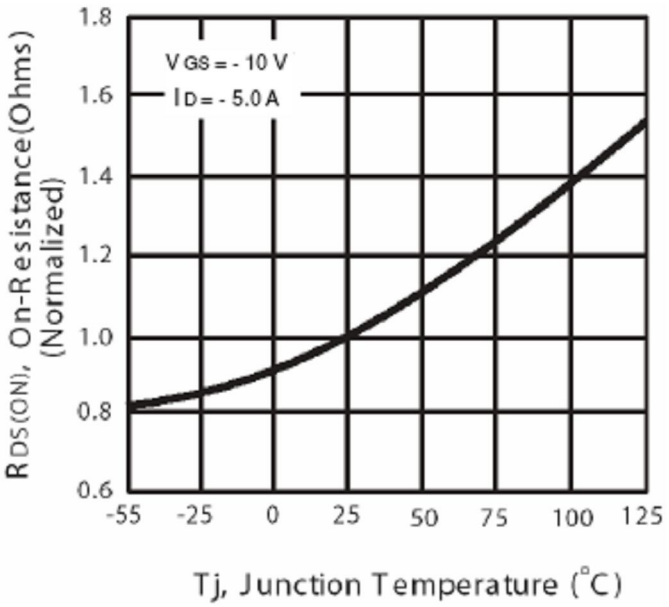


Fig 5. Breakdown Voltage v.s. Junction Temperature

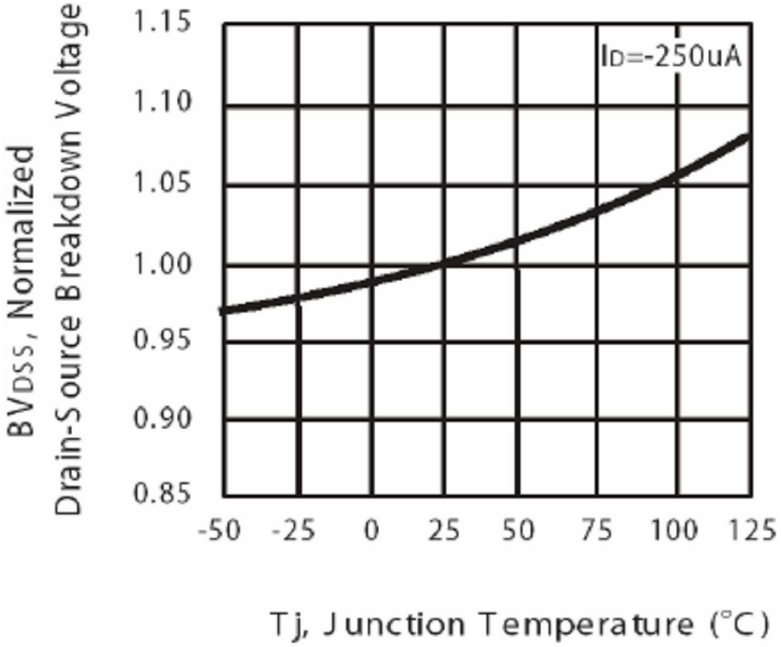


Fig 6. Body Diode Forward Voltage v.s. Source Current

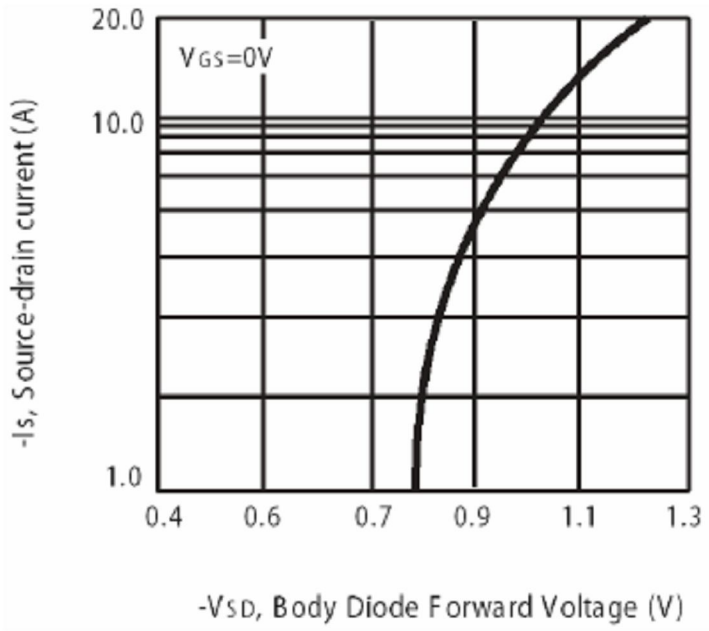


Fig 7. Maximum Safe Operating Area

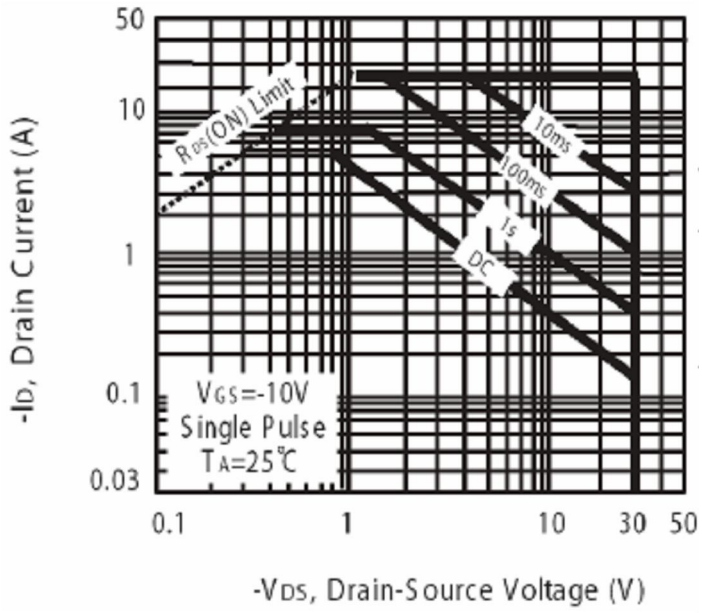


Fig 8. Gate Threshold Voltage v.s. Junction Temperature

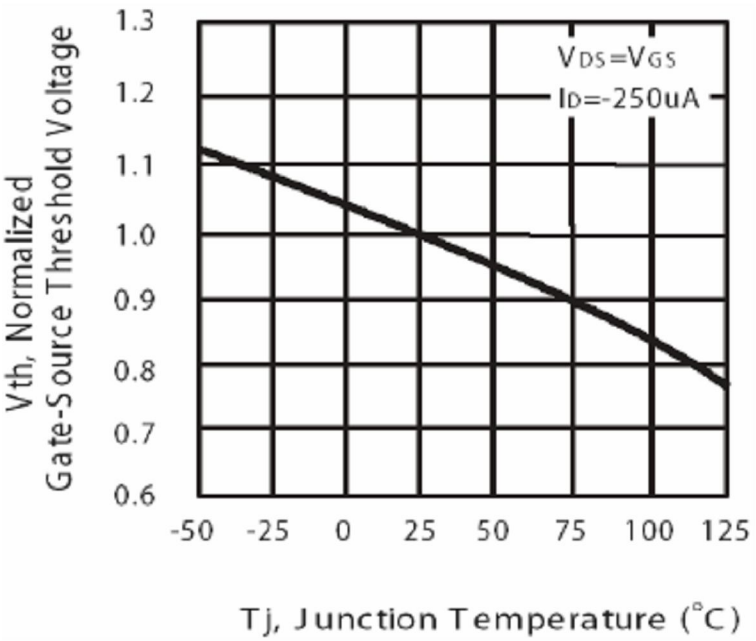


Fig 9. Gate Charge Characteristics

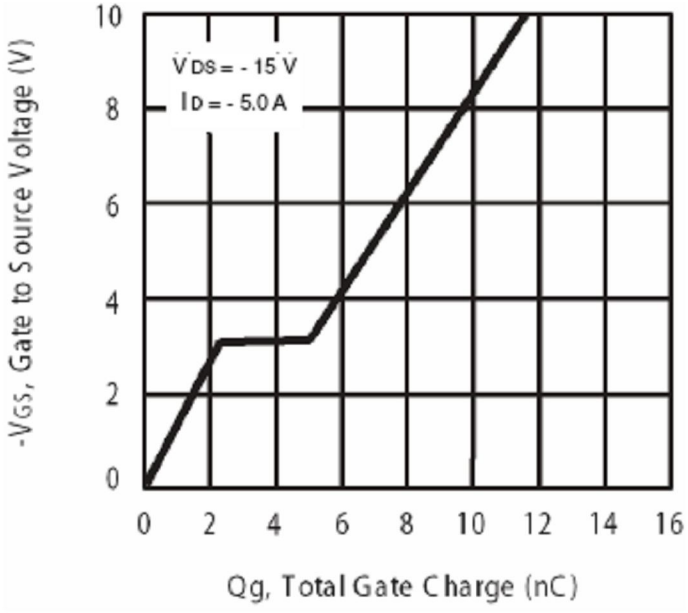


Fig 10. Typical Capacitance Characteristics

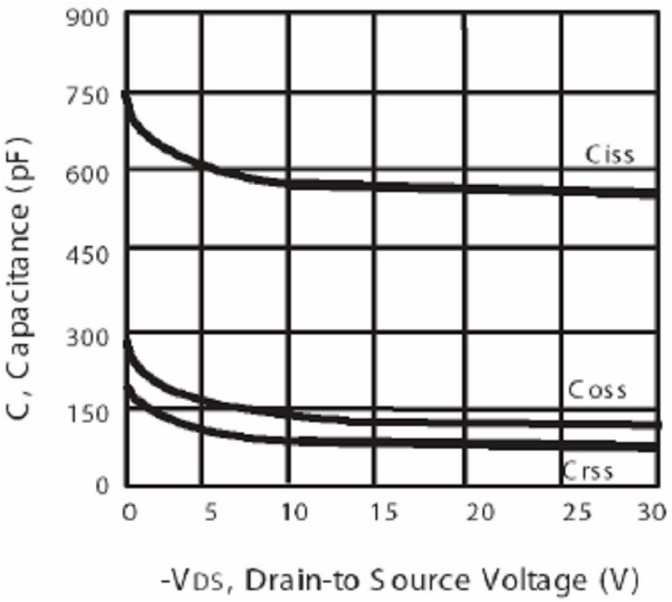


Fig 11. Switching Time Circuit

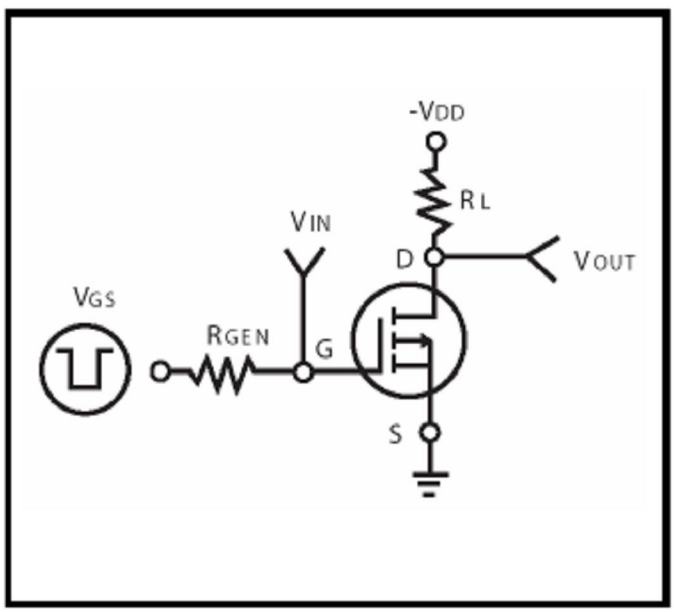


Fig 12. Switching Time Waveform

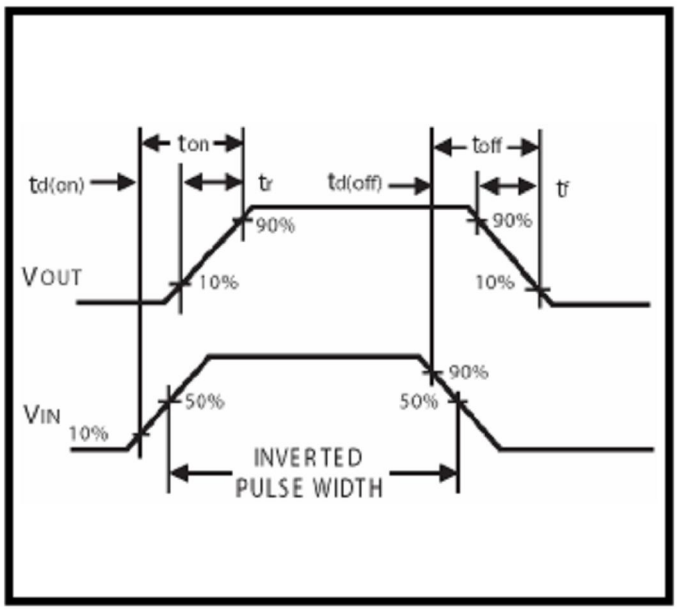
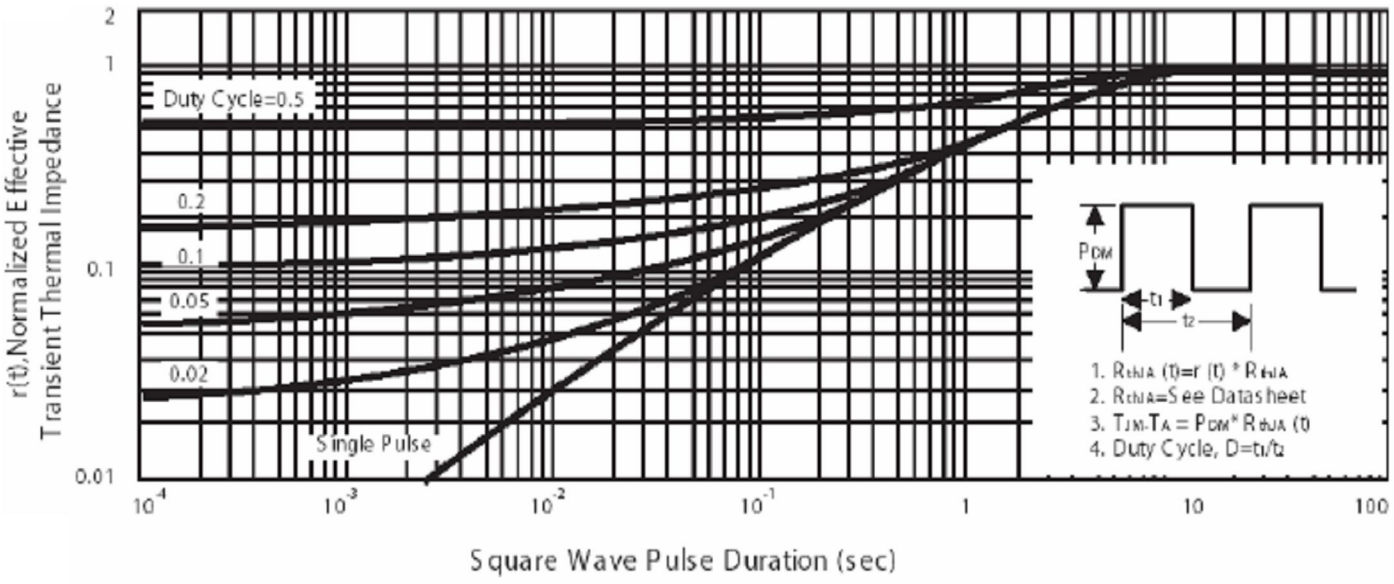


Fig 13. Normalized Thermal Transient Impedance Curve



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