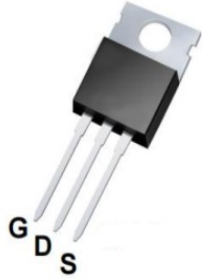




1.Features

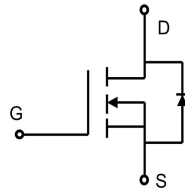
- V_{DS} 40V
- I_D 140A
- $R_{DS(on)}$ (at $V_{GS}=10V$) 1.9m Ω (Typ)

TO-220



2.Mechanical Data

- Case:Molded Plastic,TO-220;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.



- 1.Gate
- 2.Darin
- 3.Source

3.Maximum Ratings and Electrical Characteristics

Rating at 25°C Cambient temperature unless otherwise specified

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	140	A
@ $T_c=25^{\circ}C$ @ $T_c=100^{\circ}C$		90	
Drain Current Pulsed	I_{DM}	400	A
Maximum Power Dissipation	P_D	73	W
Single Pulsed Avalanche Energy	E_{AS}	529	mJ
Operation Junction Temperature Range	T_J	-55~+150	$^{\circ}C$
Storage Temperature Range	T_{stg}	-55~+150	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.3	$^{\circ}C/W$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62	$^{\circ}C/W$



Parameters	Symbol	Cindition	Min	TYP	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA,	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} = 0V	-	-	1	μA
Gate-Body Leakage Current, Forward	I _{GSS}	V _{GS} = ±20V V _{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.7	3.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 40A	-	1.9	2.5	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	2.4	3.5	
Gate Resistance	R _G	V _{GS} =0V,f=1MHz	-	2	-	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V f =1.0MHz	-	4000	-	pf
Output Capacitance	C _{oss}		-	150	-	pf
Reverse Transfer Capacitance	C _{rss}		-	2.5	-	pf
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 20V, I _D =40A , V _{DS} = 10V R _G = 3Ω	-	15	-	ns
Turn-On Rise Time	t _r		-	25	-	ns
Turn-Off Delay Time	t _{d(off)}		-	68	-	ns
Turn-Off Fall Time	t _f		-	26	-	ns
Total Gate Charge	Q _g	V _{DS} = 20V, I _D =40A, V _{GS} =10V	-	62	-	nC
Gate-Source Charge	Q _{gs}		-	12	-	nC
Gate-Drain Charge	Q _{gd}		-	10	-	nC
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _{SD} =1A	-	0.72	1.3	V
Drain-Source Diode Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V , Force Current	-	-	140	A
Pulsed Source Current	I _{SM}		-	-	280	
Reverse Recovery Time	T _{rr}	I _S =40A,V _{GS} =0V, dIF/dt=100A/μS	-	48	-	ns
Reverse Recovery Charge	Q _{rr}		-	55	-	μC

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=46A$, Starting $T_J=25^\circ C$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.



4. Rating And Characteristic Curves

Fig 1. Continuous Drain Current vs. TC

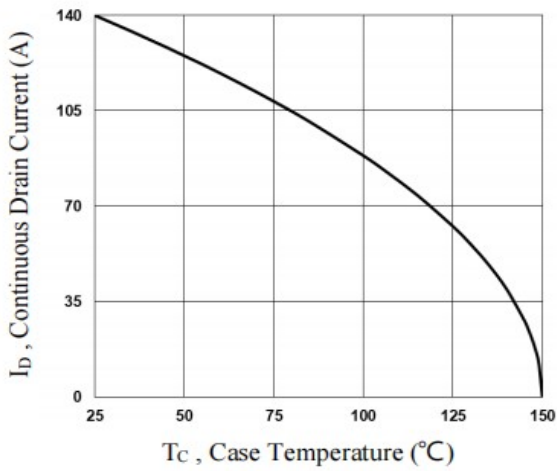


Fig 2. Normalized $R_{DS(on)}$ vs. T_J

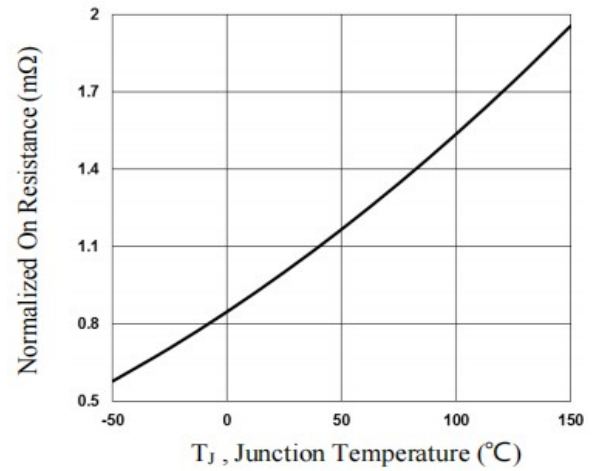


Fig 3. Normalized V_{th} vs. T_J

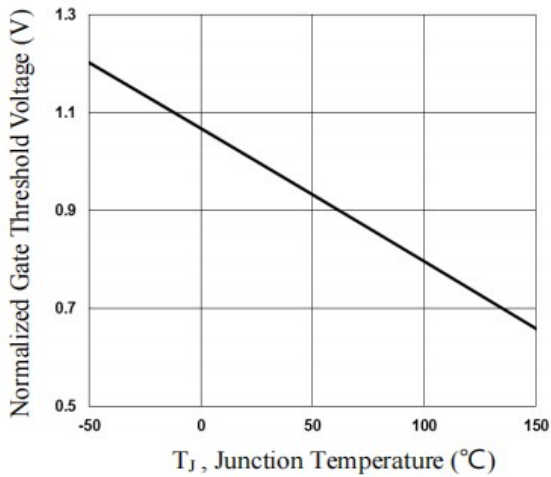


Fig 4. Gate Charge Characteristics

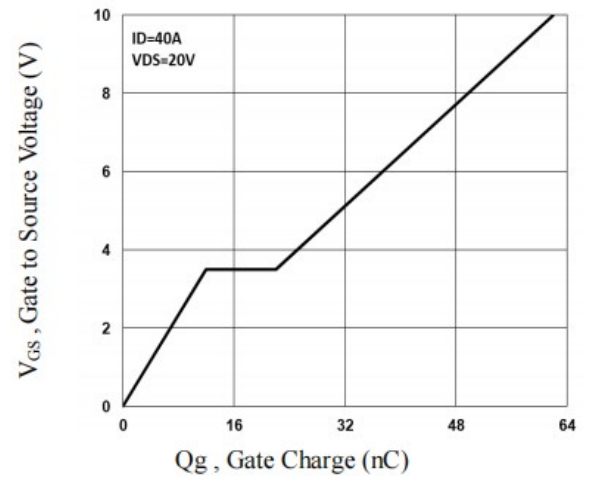


Fig 5. Normalized Transient Impedance

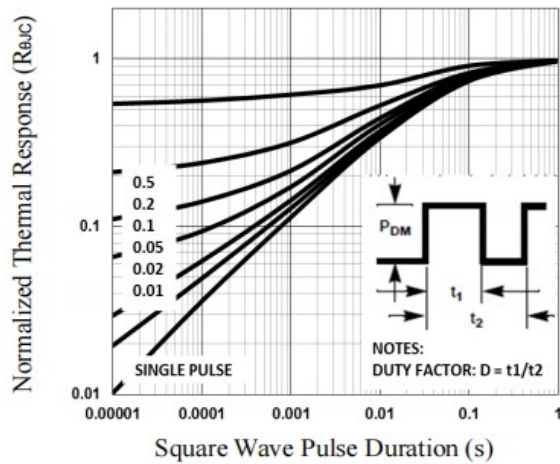
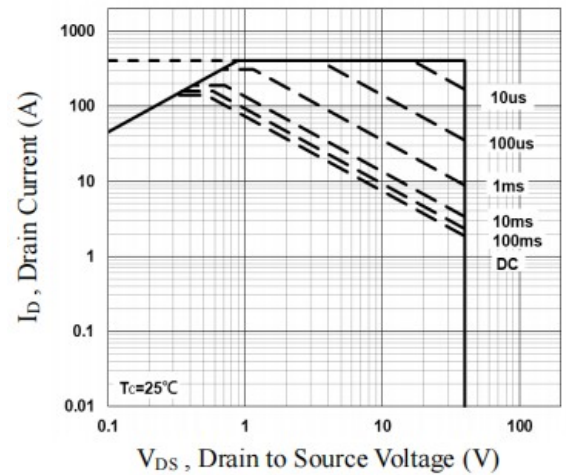


Fig 6. Gate Charge





5. Test circuits

Fig 7. Switching Time Waveform

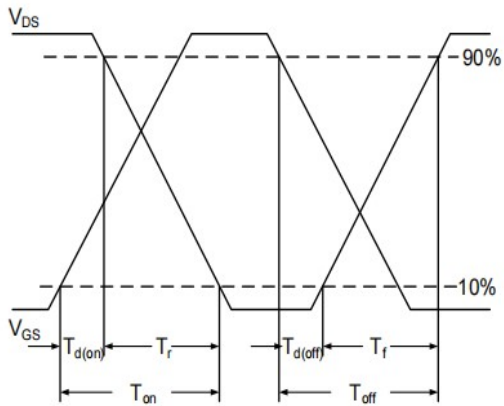
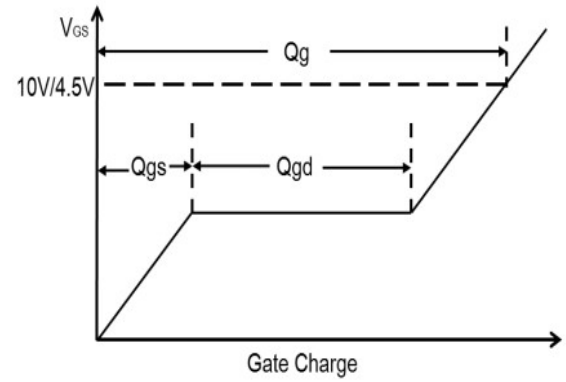
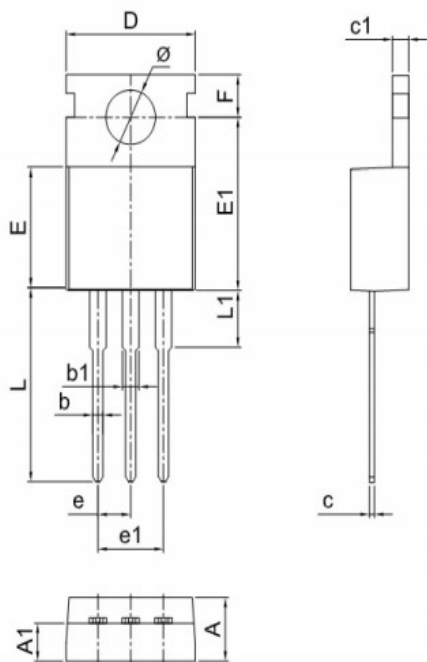


Fig 8. Gate Charge Waveform



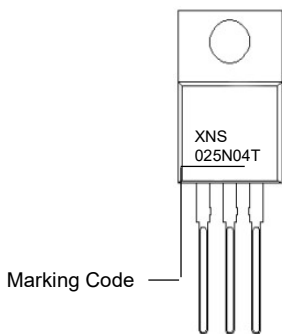
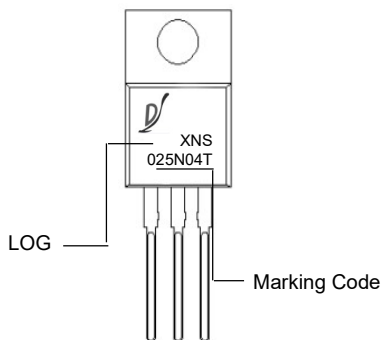


6. Test circuits



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.169	0.184	4.28	4.68
A1	0.098	0.110	2.50	2.80
b	0.024	0.039	0.60	1.00
b1	0.043	0.059	1.10	1.50
c	0.012	0.024	0.30	0.60
c1	0.043	0.059	1.10	1.50
D	0.390	0.406	9.90	10.30
E	0.335	0.366	8.50	9.30
E1	0.472	0.492	12.00	12.50
e	0.094	0.104	2.40	2.65
e1	0.191	0.209	4.85	5.30
F	0.102	0.110	2.60	2.80
L	0.504	0.543	12.80	13.80
L1	0.150	0.165	3.80	4.20
Ø	0.134	0.157	3.40	4.00

7. Part Marking System



8. Package Information

Package	Packing Type	Quantity(pcs)
TO-220	Tube	50



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