

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	18m Ω @10V	60A

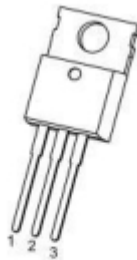
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Application

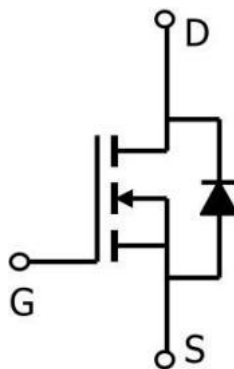
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

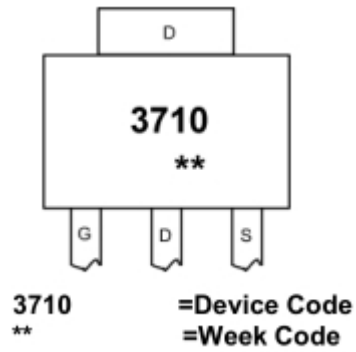


TO-220-3L-C(G:1 D:2 S:3)

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ ($T_C=25^\circ\text{C}$)	I_D	60	A
Pulsed Drain Current ²	I_{DM}	240	A
Single Pulse Avalanche Energy ³	E_{AS}	1060	mJ
Total Power Dissipation($T_C=25^\circ\text{C}$)	P_D	200	W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	0.625	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$

Electrical characteristics

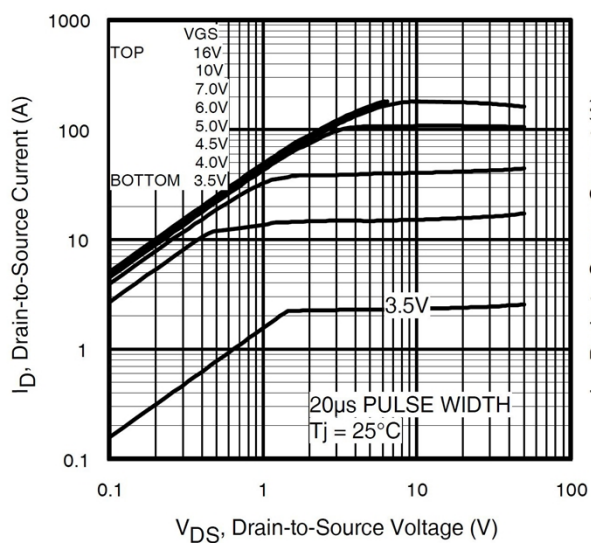
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100			V
Bvdss Temperature Coefficient	ΔBVDSS/ΔTJ	ID=250uA, Reference25°C		0.13		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} = 0V, T _J =25°C			25	uA
Gate-body leakage current	I _{GSS}	V _{GS} = ±25V, V _{DS} = 0V			±100	uA
Gate threshold voltage ⁽¹⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Static Drain-Source on-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		18	23	mΩ
Dynamic Characteristics ⁴⁾						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		3230		pF
Output capacitance	C _{oss}			430		
Reverse transfer capacitance	C _{rss}			69		
Switching Characteristics ⁴⁾						
Total gate charge	Q _g	V _{GS} =50V, V _{DS} =10V, I _D =60A		134		nC
Gate-source charge	Q _{gs}			22		
Gate-drain charge	Q _{gd}			48		
Turn-on Delay Time	T _{d(on)}	V _{DD} =180V, V _{GS} =10V , R _G =10Ω, I _D =20A		28		nS
Turn-on Rise Time	T _r			47		
Turn-Off Delay Time	T _{d(off)}			57		
Turn-Off Fall Time	t _f			40		

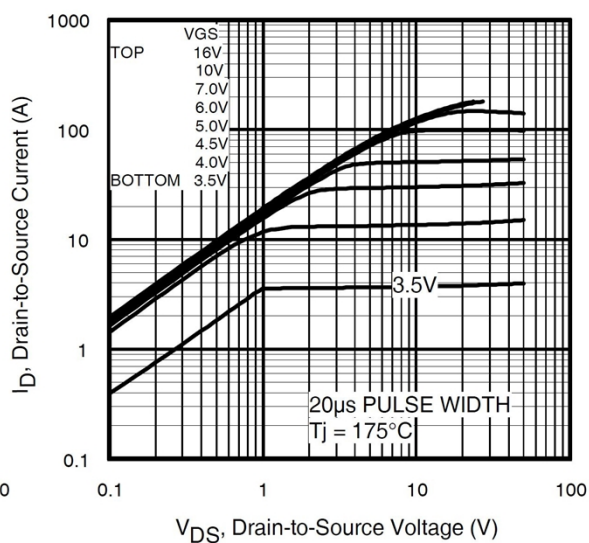
Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZcopper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $V_{DD} = 50V, R_G = 25\Omega, L = 0.5mH$

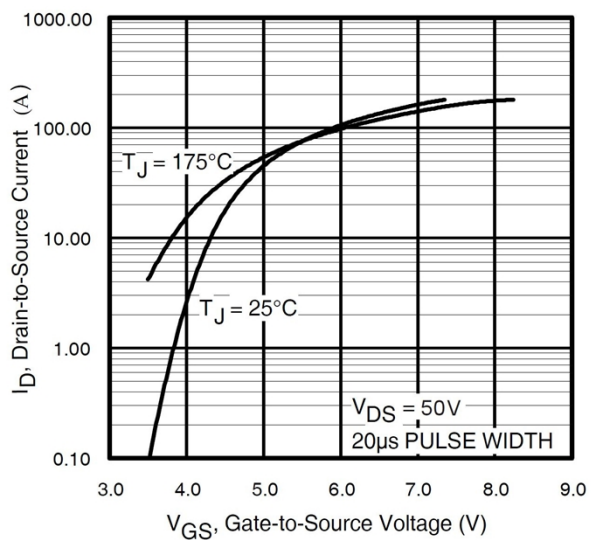
Typical Characteristics



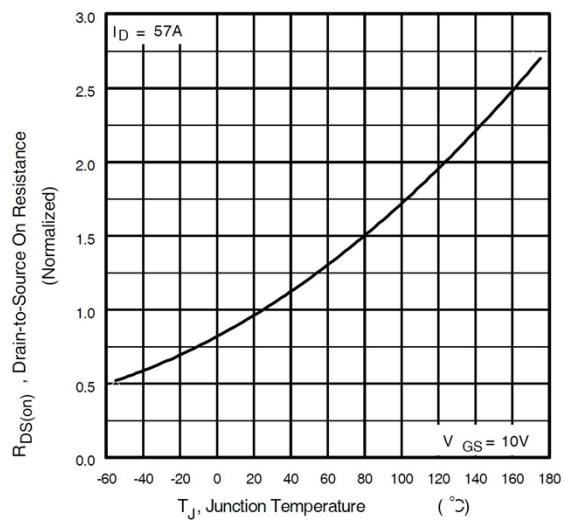
Typical Output Characteristics



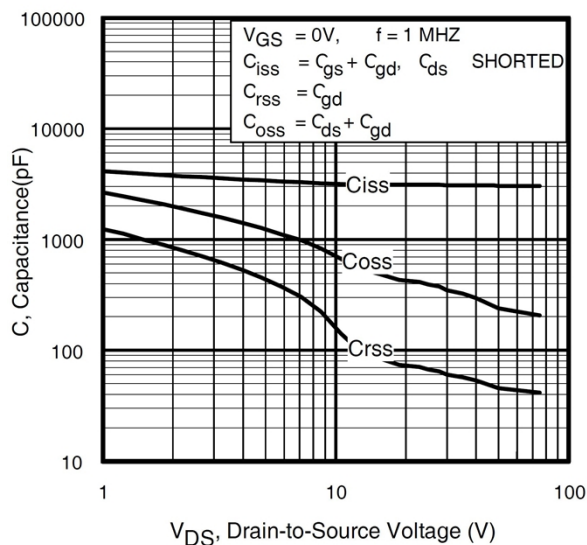
Typical Output Characteristics



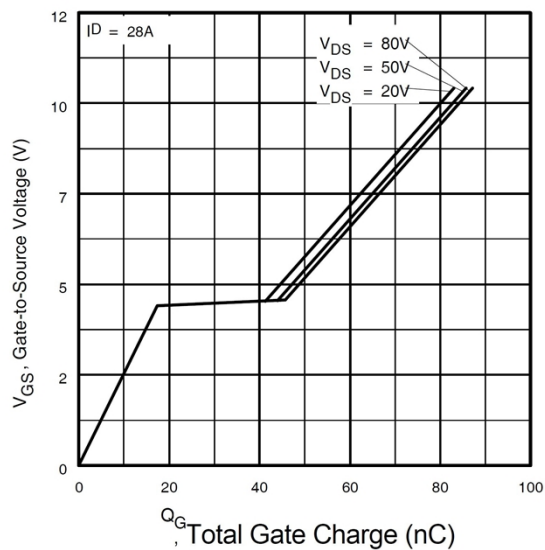
Typical Transfer Characteristics



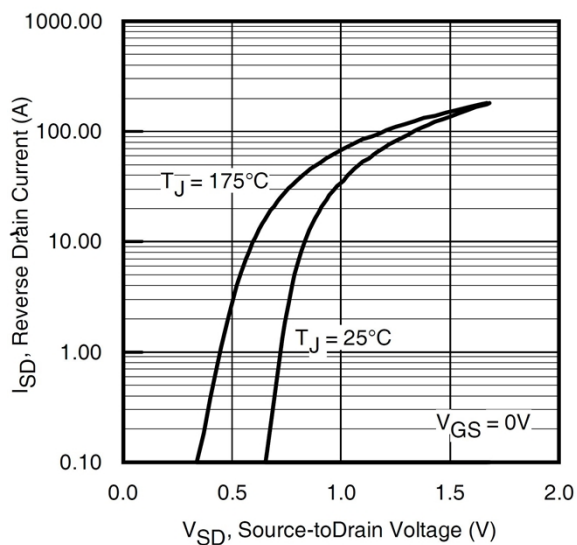
Normalized On-Resistance Vs. Temperature



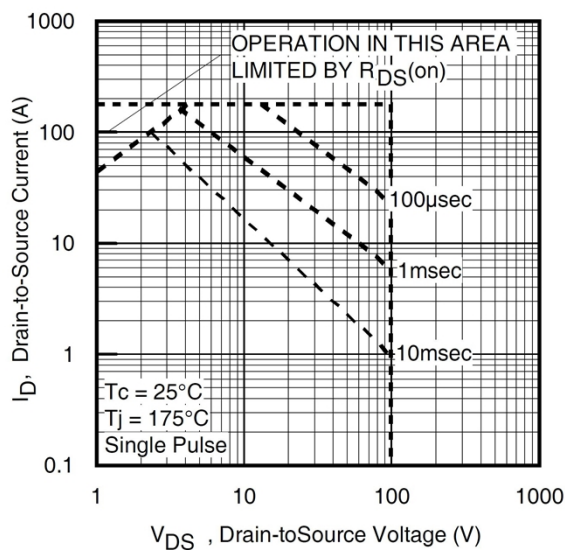
Typical Capacitance Vs. Drain-to-Source Voltage



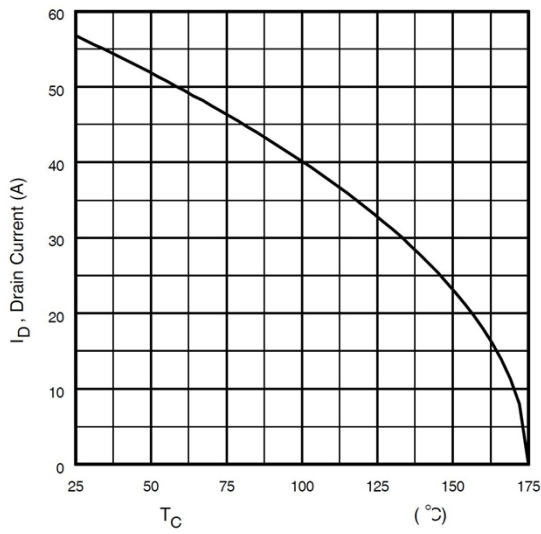
Typical Gate Charge Vs. Gate-to-Source Voltage



Typical Source-Drain Diode Forward Voltage



Maximum Safe Operating Area



Case Temperature
Maximum Drain Current Vs.
Case Temperature

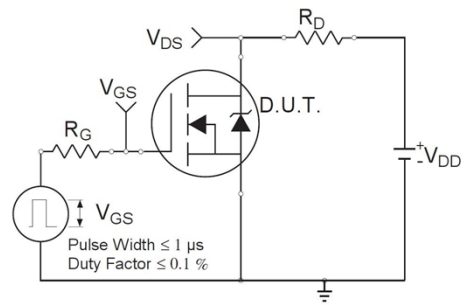
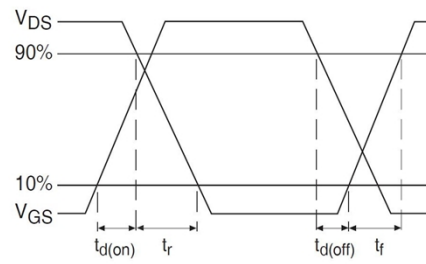
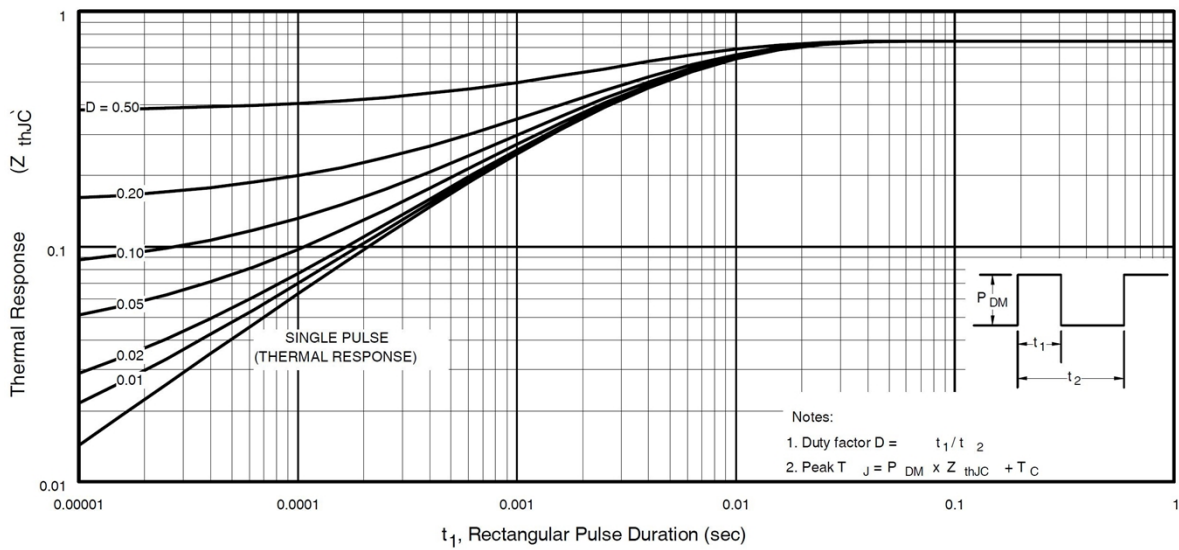


Fig 10a. Switching Time Test Circuit

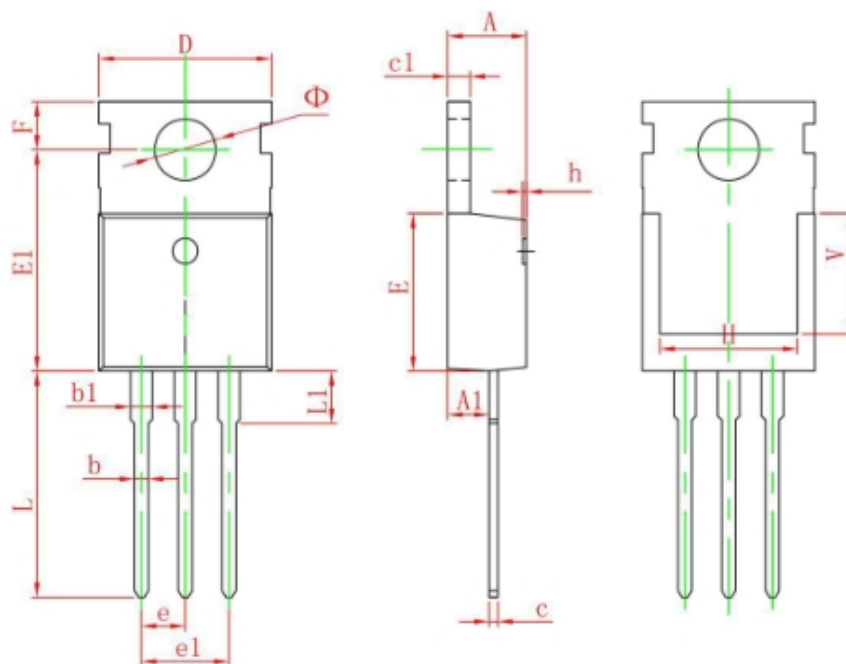


Switching Time Waveforms



Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150