

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
70V	7.4mΩ@10V	90A

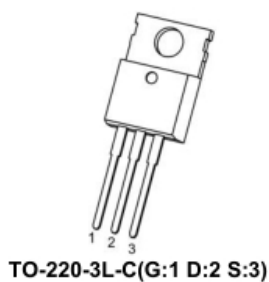
Feature

- 70V, 90A
- $R_{DS(ON)} < 7.4m\Omega$ @ $V_{GS} = 10V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

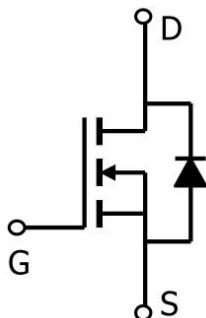
Applications

- Power switching application
- load switching
- Power management

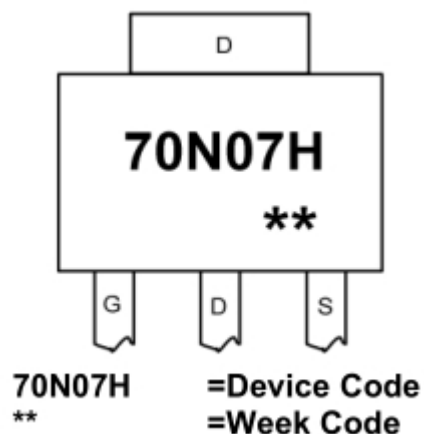
Package



Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	70	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	(T _C = 25°C)	90
		(T _C = 100°C)	56
Pulsed Drain Current note ¹	I _{DM}	360	A
Single Pulsed Avalanche Energy note ²	E _{AS}	121	mJ
Power Dissipation (T _C = 25°C)	P _D	130	W
Thermal Resistance, Junction to Case	R _{θJC}	0.96	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Electrical characteristics

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

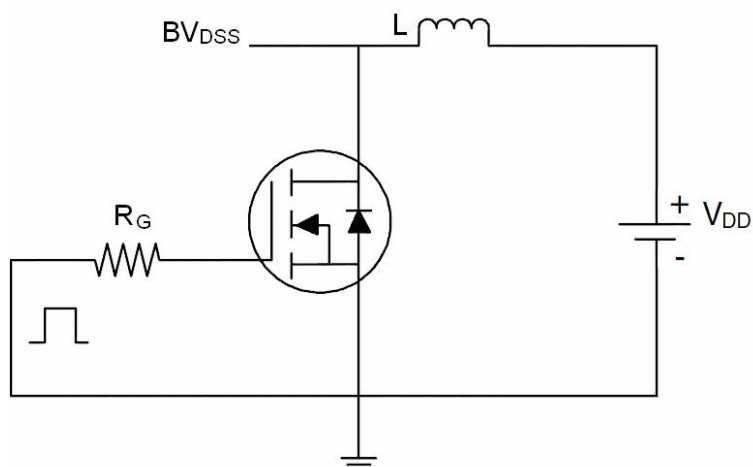
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	70			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =56V, V _{GS} = 0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Static Drain-Source on-Resistance note3	R _{DS(on)}	V _{GS} =10V, I _D =30A		7.4	9.3	mΩ
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		4062		pF
Output capacitance	C _{oss}			261		
Reverse transfer capacitance	C _{rss}			231		
Total Gate Charge	Q _g	V _{DS} =30V, I _D =20A, V _{GS} =10V		35		pF
Gate-Source Charge	Q _{gs}			11		
Gate-Drain Charge	Q _{gd}			9		
Switching Characteristics						
Turn-on Delay Time	T _{d(on)}	V _{DS} =30V, I _D =20A, R _{GEN} =6Ω, V _{GS} =10V		15		nS
Turn-on Rise Time	T _r			94		
Turn-Off Delay Time	T _{d(off)}			46		
Turn-Off Fall Time	t _f			32		
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S				80	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}				320	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A			1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, dI/dt=100A/μs		78		ns
Body Diode Reverse Recovery Time Charge	Q _{rr}			51		nC

Note:

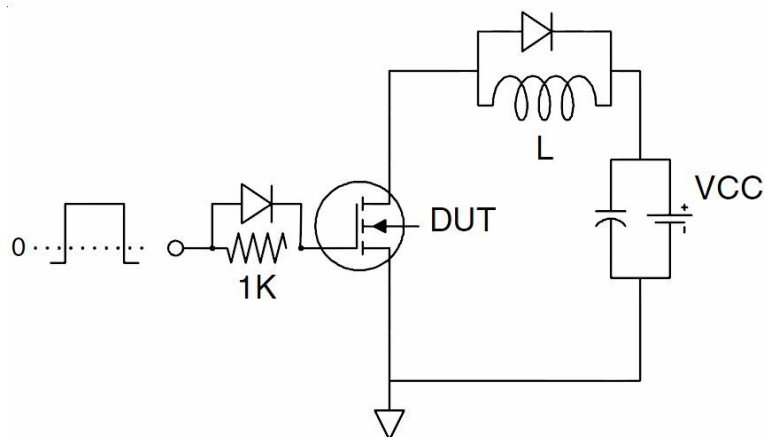
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=35V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Test Circuits

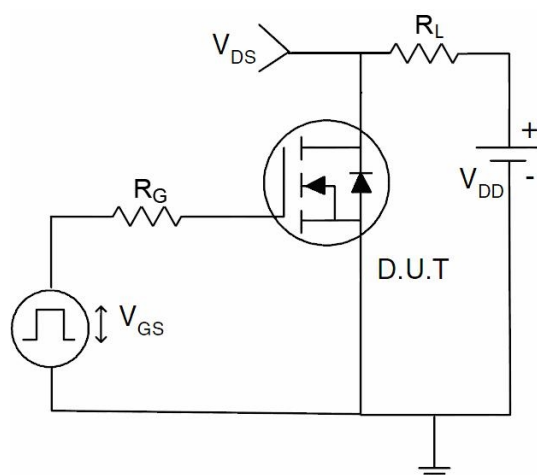
- EAS Test Circuits



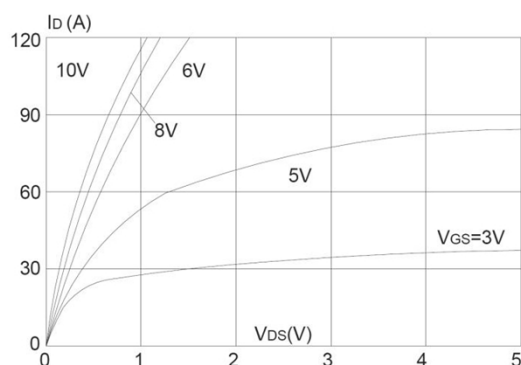
- Gate Charge Test Circuit



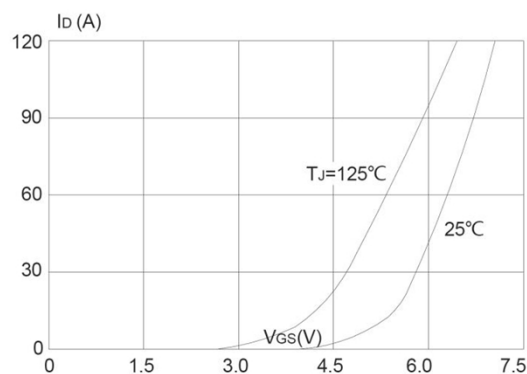
- Switch Time Test Circuit



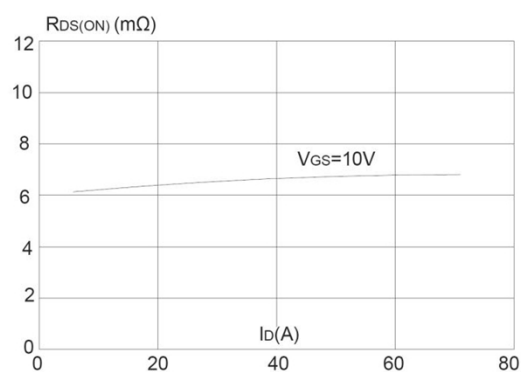
Typical Characteristics



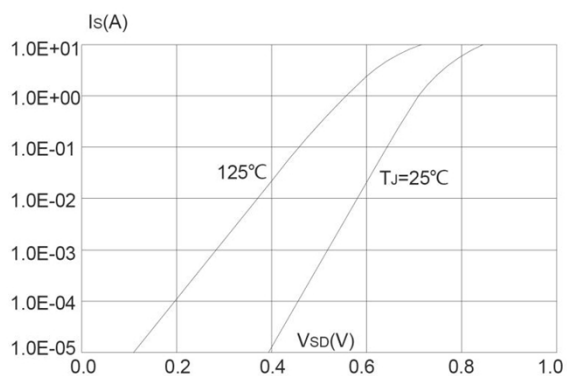
Output Characteristics



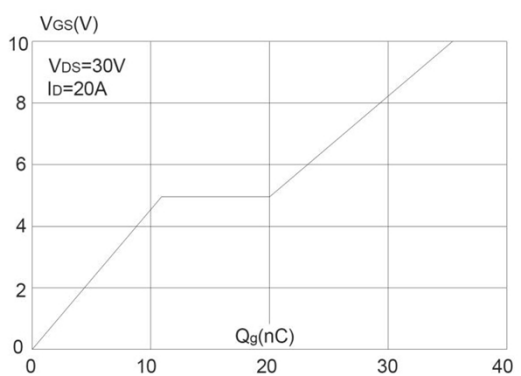
Typical Transfer Characteristics



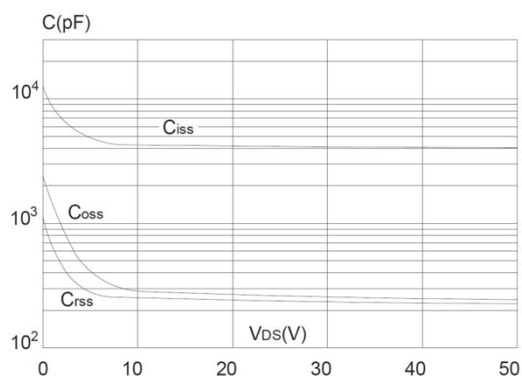
On-resistance vs. Drain Current



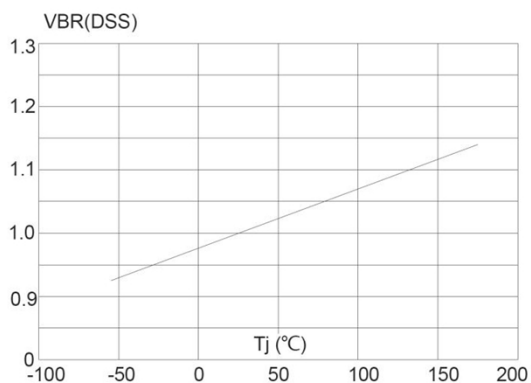
Body Diode Characteristics



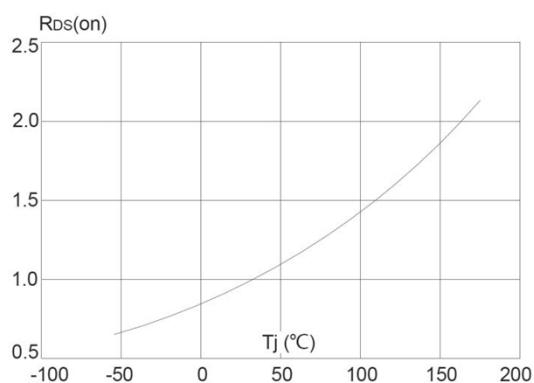
Gate Charge Characteristics



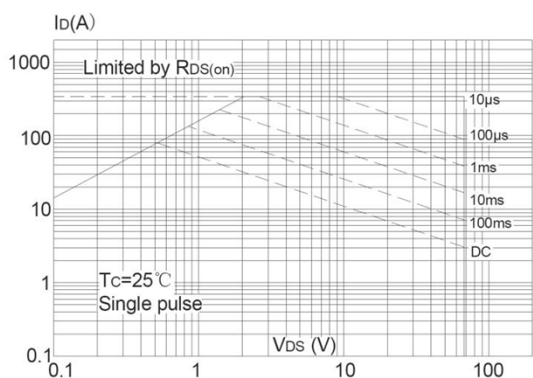
Capacitance Characteristics



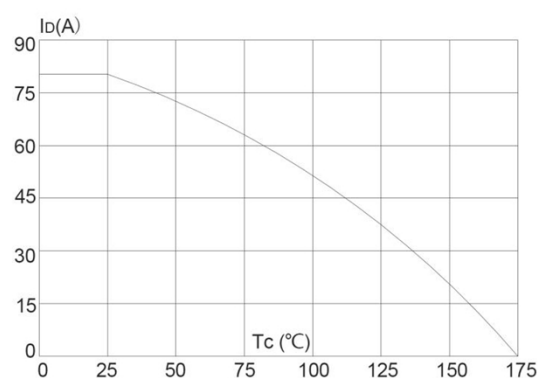
Normalized Breakdown Voltage
vs. Junction Temperature



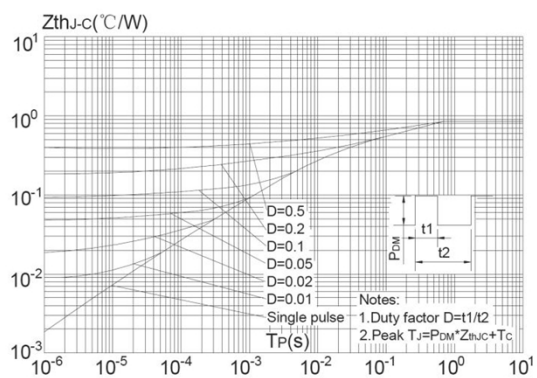
Normalized on Resistance
vs. Junction Temperature



Maximum Safe Operating Area

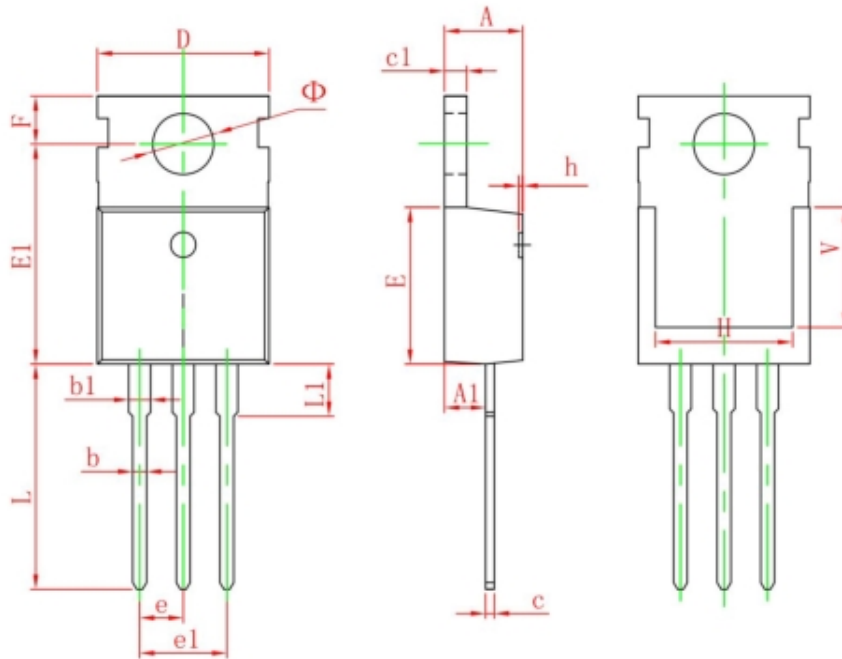


Maximum Continuous Drain Current
vs. Case Temperature



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