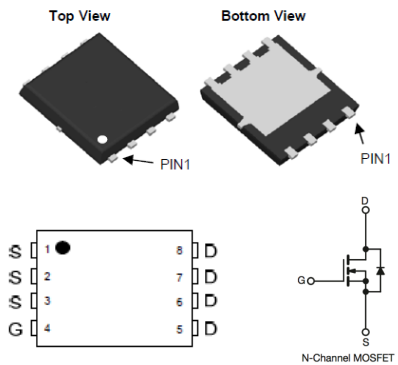


70A N-Channel Enhancement Mode Power MOSFET - 150V
PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(on)MAX}$	I_D
150V	$11.5m\Omega @ V_{GS}=10V$	70A

GENERAL DESCRIPTION

- DC/DC power supplies
- Industrial motor drives

PR-PAK
PACKAGE

MECHANICAL DATA

- Case : Molded plastic, PR-PAK
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Epoxy : UL94-V0 rated flame retardant

Absolute Maximum Ratings @ $T_A=25^\circ C$ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current (Continuous) *AC	$T_C=25^\circ C$	I_D	70	A
	$T_C=70^\circ C$		58	
Single Pulsed Avalanche Energy	$L = 0.4mH, I_{AS} = 25A,$	E_{AS}	125	mJ
Drain Current (Pulse) *B		I_{DM}	280	A
Power Dissipation	$T_C=25^\circ C$	P_D	104	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	$^\circ C$

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	$t \leq 10 s$	R_{thJA}	20	$^\circ C/W$
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1.2	

70A N-Channel Enhancement Mode Power MOSFET - 150V
Electrical Characteristics @T_A=25°C unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	150	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 150 V, V _{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} = 250μA	2	--	4	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A	--	8.6	11.5	mΩ
Diode Forward Voltage	V _{SD}	I _{SD} = 20A , V _{GS} =0V	--	--	1.5	V
Diode Forward Current	I _S	T _C =25°C	--	--	69	A
Switching						
Total Gate Charge	Q _g	V _{DS} = 75V, I _D = 20A, V _{GS} = 10V	--	39	--	nC
Gate-Source Charge	Q _{gs}		--	12	--	nC
Gate-Drain Charge	Q _{gd}		--	7.6	--	nC
Turn-on Delay Time	t _{d (on)}	V _{DD} = 75V, I _D = 20A, V _{GS} = 10V, R _{GEN} = 3Ω	--	34	--	ns
Turn-on Rise Time	t _r		--	10	--	ns
Turn-off Delay Time	t _{d(off)}		--	52	--	ns
Turn-Off Fall Time	t _f		--	13	--	ns
Dynamic						
Input Capacitance	C _{iSS}	V _{DS} = 75V, V _{GS} = 0V, f = 1.0 MHz	--	2510	--	pF
Output Capacitance	C _{oSS}		--	300	--	pF
Reverse Transfer Capacitance	C _{rSS}		--	5	--	pF

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t_s ≤ 10s junction to ambient thermal resistance rating.



Typical Performance Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

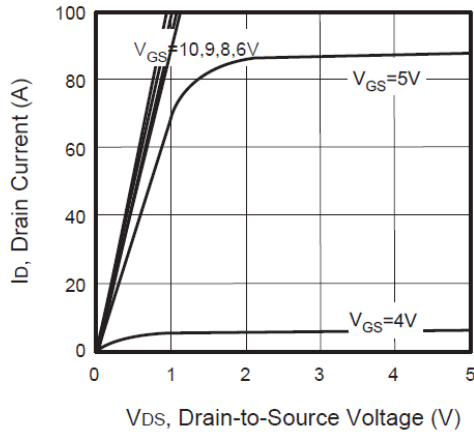


Figure 1. Output Characteristics

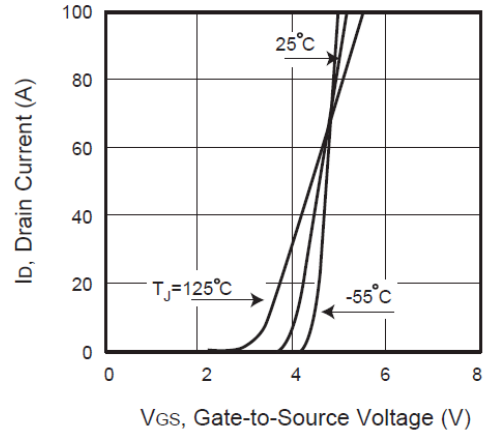


Figure 2. Transfer Characteristics

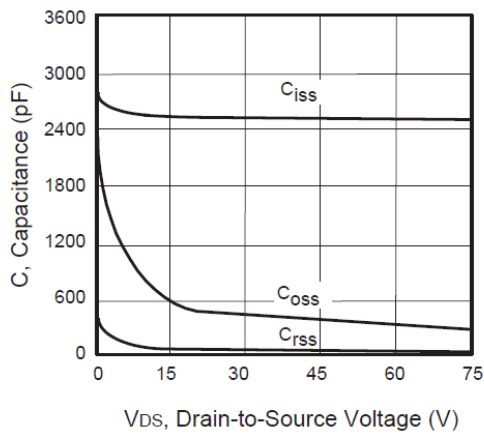


Figure 3. Capacitance

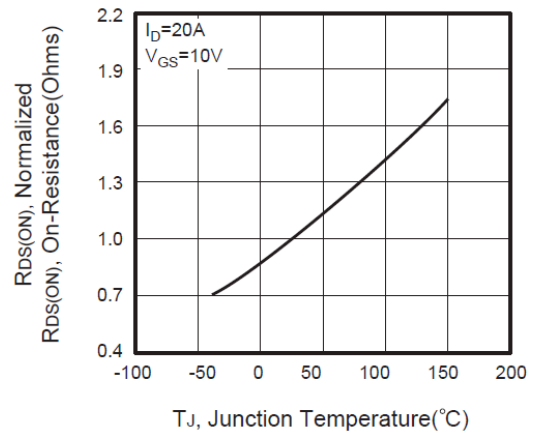


Figure 4. On-Resistance Variation with Temperature

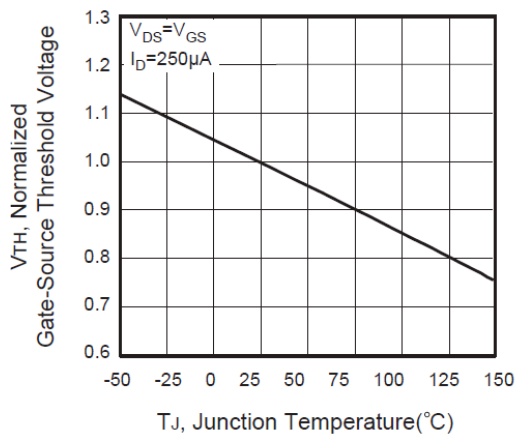


Figure 5. Gate Threshold Variation with Temperature

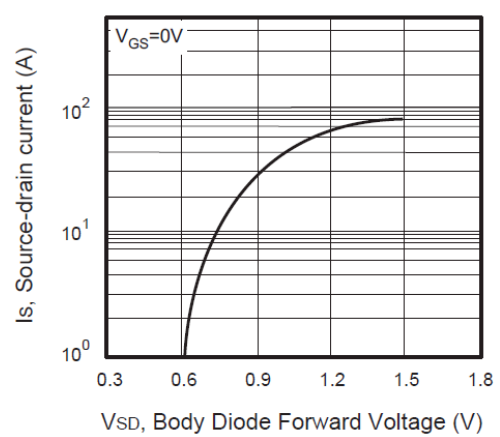
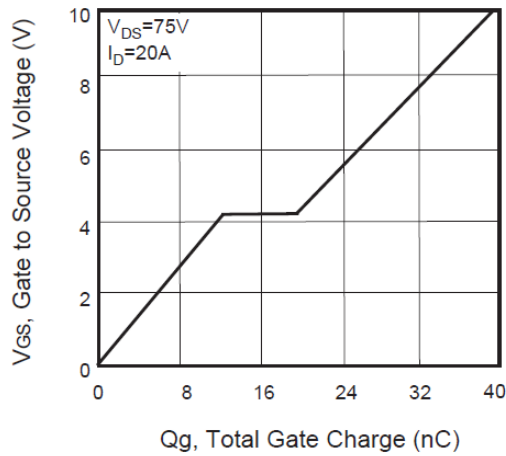
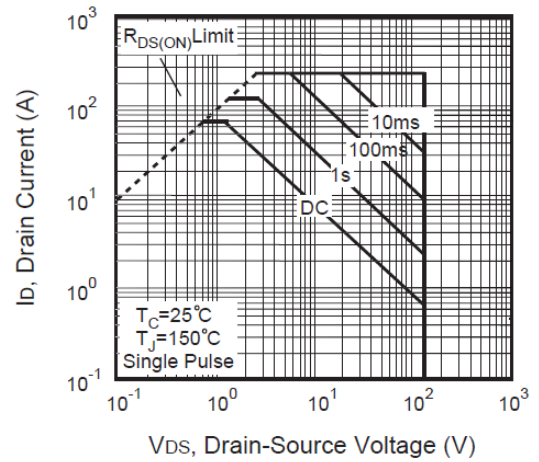
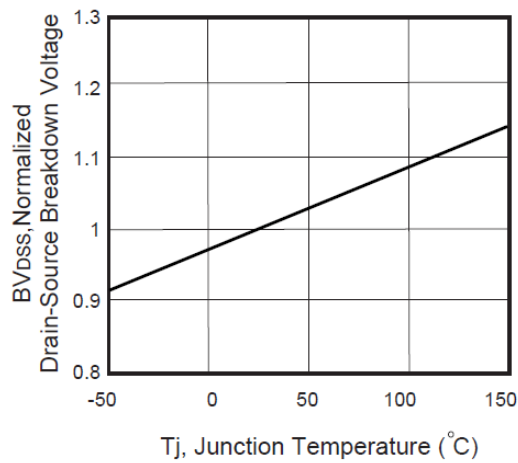
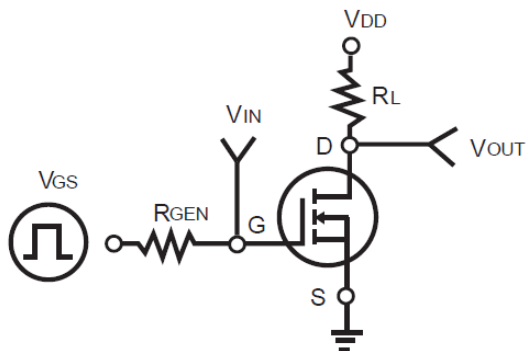
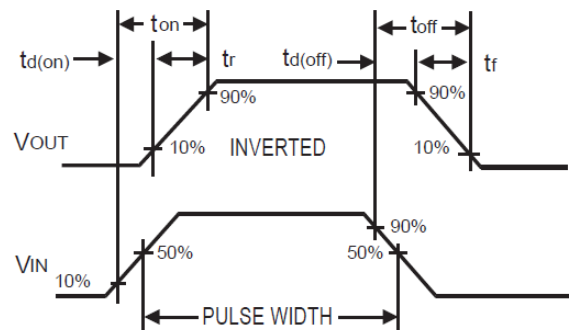


Figure 6. Body Diode Forward Voltage Variation with Source Current

**Figure 7. Gate Charge****Figure 8. Maximum Safe Operating Area****Figure 9. Breakdown Voltage Variation VS Temperature****Figure 10. Switching Test Circuit****Figure 11. Switching Waveforms**

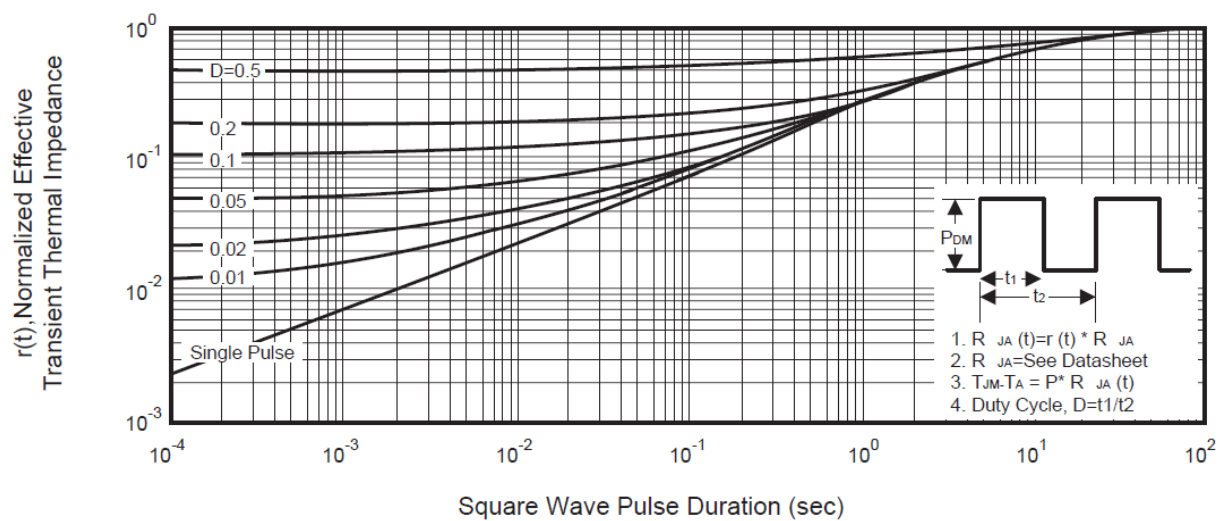
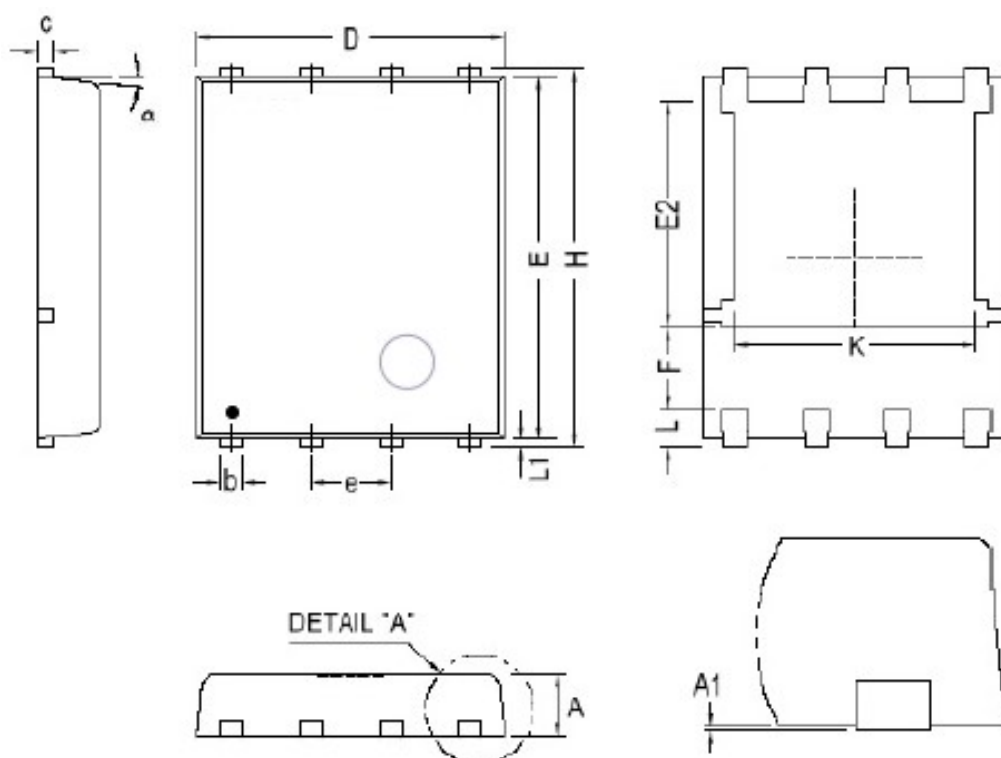


Figure 12. Normalized Thermal Transient Impedance Curve



Outline Drawing

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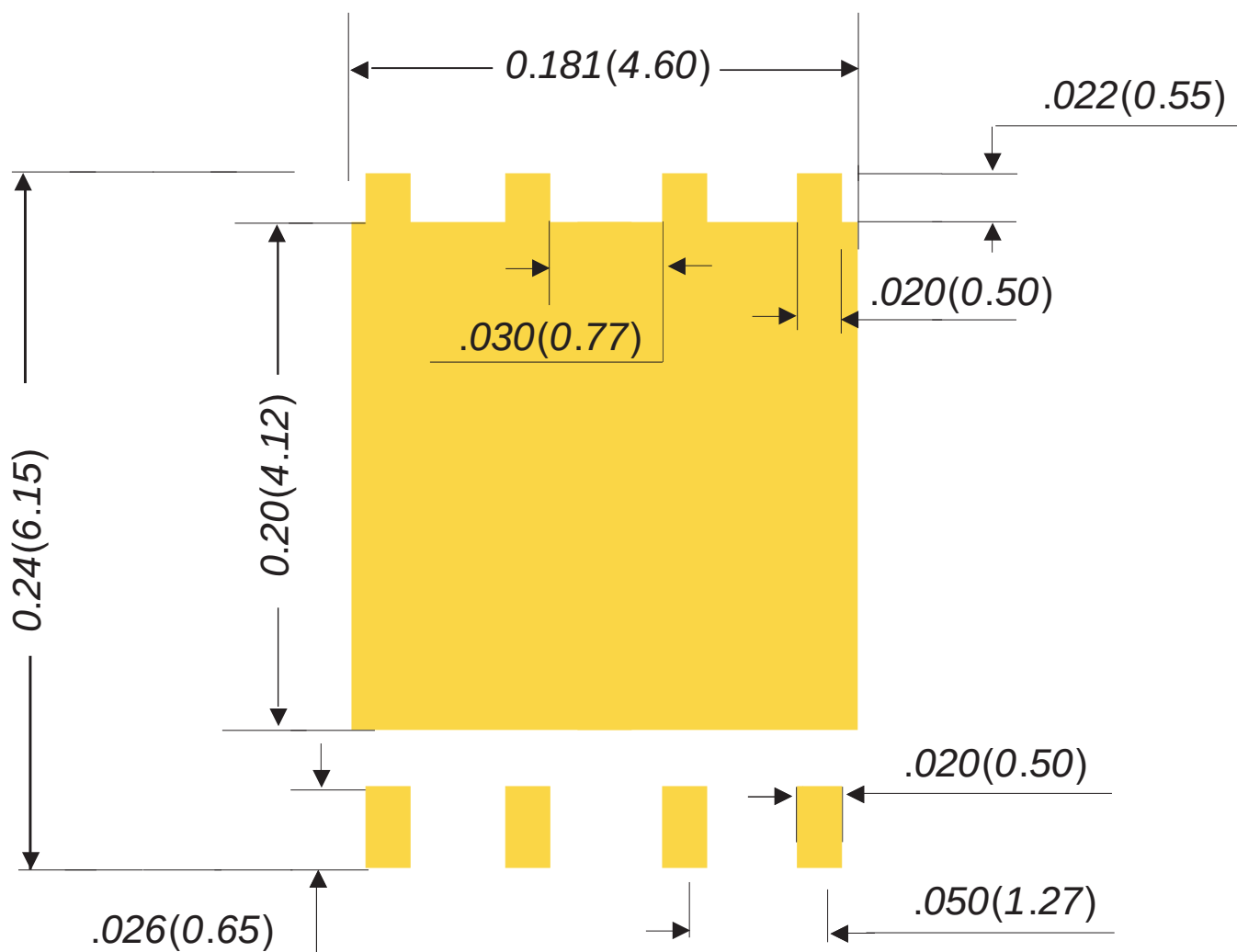


REF.	Millimeter			REF.	Millimeter		
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	0.80	1.00	1.17	E	5.70	-	5.90
A1	0.00	-	0.10	e	-	1.27	-
b	0.30	-	0.51	H	5.90	-	6.20
c	0.20	-	0.34	L	-	0.60	-
D	4.80	-	5.10	L1	0.06	-	0.25
F	1.10REF.			α	0°	-	12°
E2	3.50REF.			K	3.70	3.90	4.10

Rev.D

Suggested Soldering Pad Layout

PR-PAK



Dimensions in inches and (millimeters)

RevB

Ordering Information:

Device PN	Packing
SPR150N70 -T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 5 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) Haloge free product for packing code suffix "H"

(3) WS : Willas brand abbreviation, Label Type does not display

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