

Product Summary

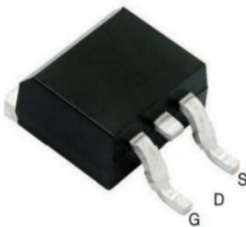
- V_{DS} -100 V
- I_{DS} -20A
- $R_{DS(ON)}$ (at $V_{GS} = -10V$) <120m Ω

Application

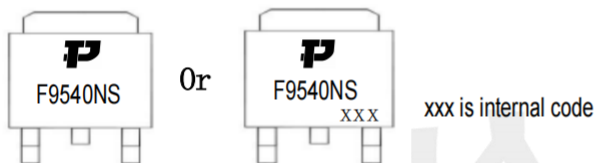
- DC/DC Converter
- Portable equipment and batt
- Power Switch

Package and Pin Configuration

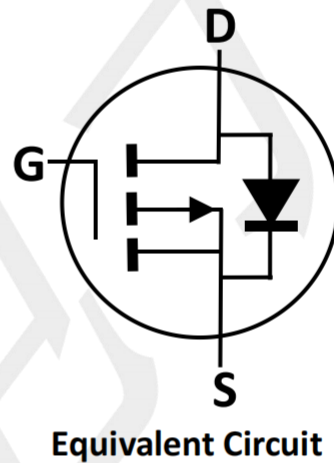
TO-263



Marking



Circuit diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-20	A
Pulsed Drain Current (note1)	I_{DM}	-55	A
Maximum Power Dissipation	P_D	79	W
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient (t≤10s)	$R_{\theta JA}$	50	°C/W

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

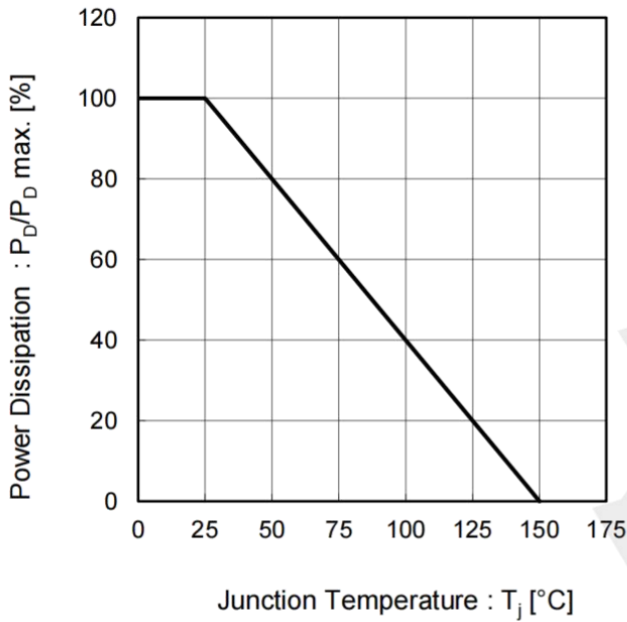
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	BV _{DSS}	-100	--	--	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	V _{GS(th)}	-2	-3	-4	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} = ±20V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} = -80V, V _{GS} =0V	I _{DSS}	--	-0.1	-1	μA
	V _{DS} = -80V, T _J =125°C		--	-10	-100	μA
Drain-Source On-State Resistance (Note 1)	V _{GS} = -10V, I _D = -1A	R _{DS(on)}	--	100	120	mΩ
	V _{GS} = -4.5V, I _D = -1A		--	120	180	
Forward Transconductance (Note 2)	V _{DS} = -5V, I _D = -15A	g _{fs}	--	26	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V _{DS} = -50V, I _D = -15A, V _{GS} = -10V	Q _g	--	64	--	nC
Gate-Source Charge (Note 3)		Q _{gs}	--	10	--	
Gate-Drain Charge (Note 3)		Q _{gd}	--	12	--	
Input Capacitance	V _{DS} = -50V, V _{GS} = 0V, F = 1.0MHz	C _{iss}	--	3800	--	pF
Output Capacitance		C _{oss}	--	162	--	
Reverse Transfer Capacitance		C _{rss}	--	100	--	
Switching						
Turn-On Delay Time (Note 3)	V _{DD} = -50V, I _D = -15A, V _{GS} = -10V, R _{GEN} = 6Ω	t _{d(on)}	--	30	--	nS
Rise Time (Note 3)		t _r	--	40	--	
Turn-Off Delay Time (Note 3)		t _{d(off)}	--	165	--	
Fall Time (Note 3)		t _f	--	96	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V _{GS} = 0V, I _{SD} = -15A	V _{SD}	--	-0.75	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I _S	--	--	-20	A
Pulsed Current (Note 1)		I _{SM}	--	--	-55	A

Notes:

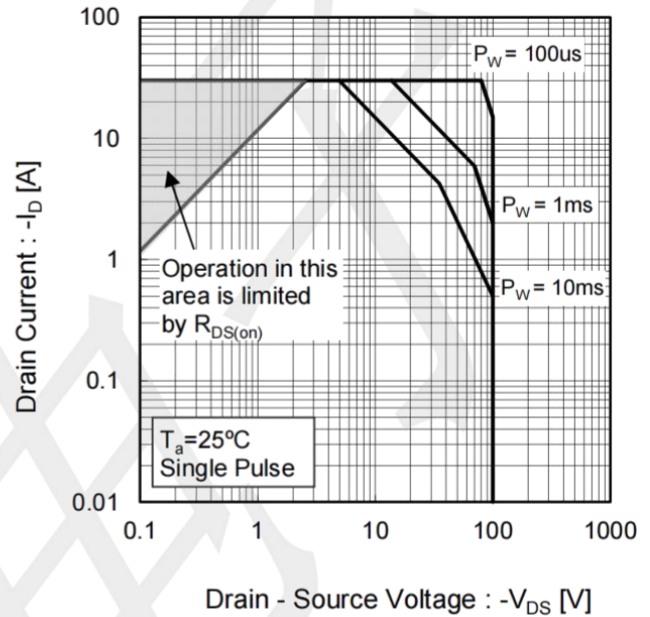
1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

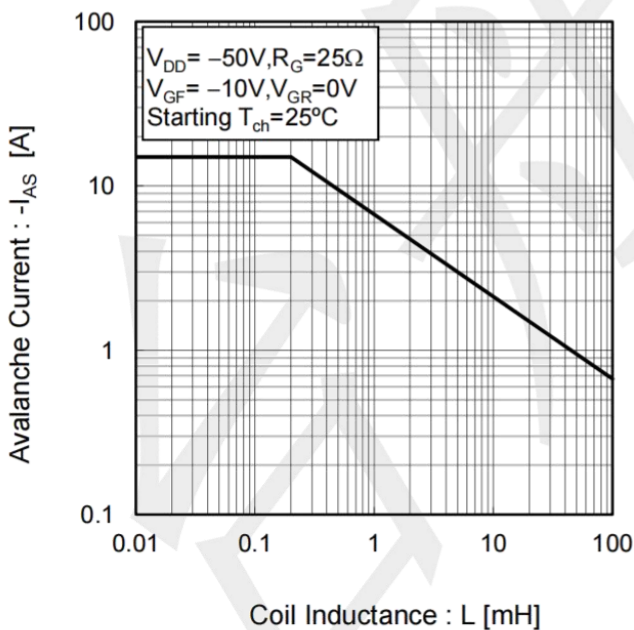
Power Dissipation Derating Curve



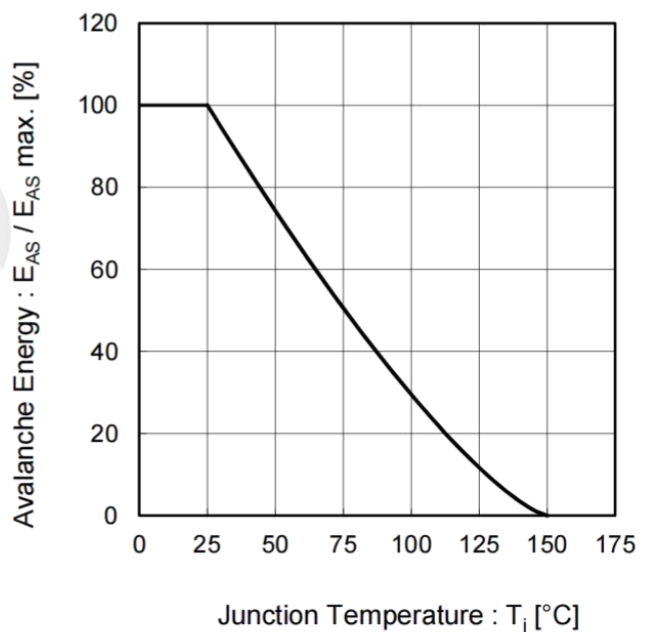
Maximum Safe Operating Area



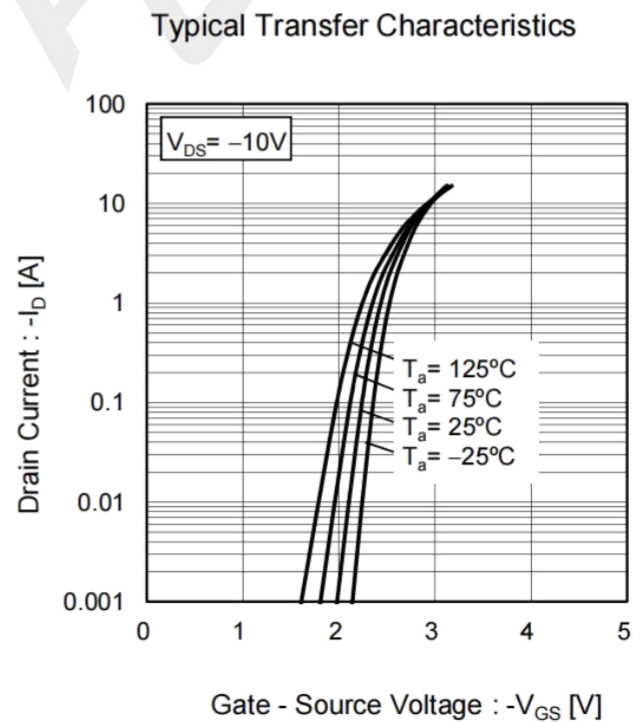
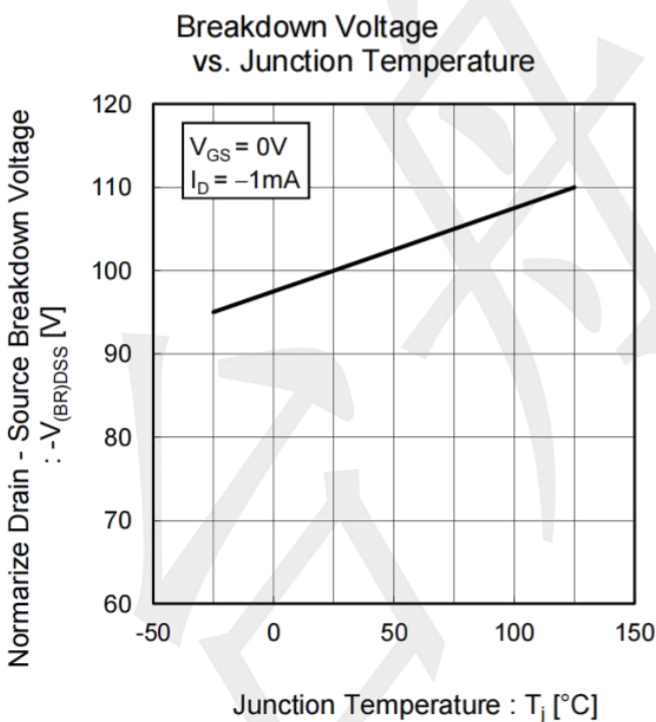
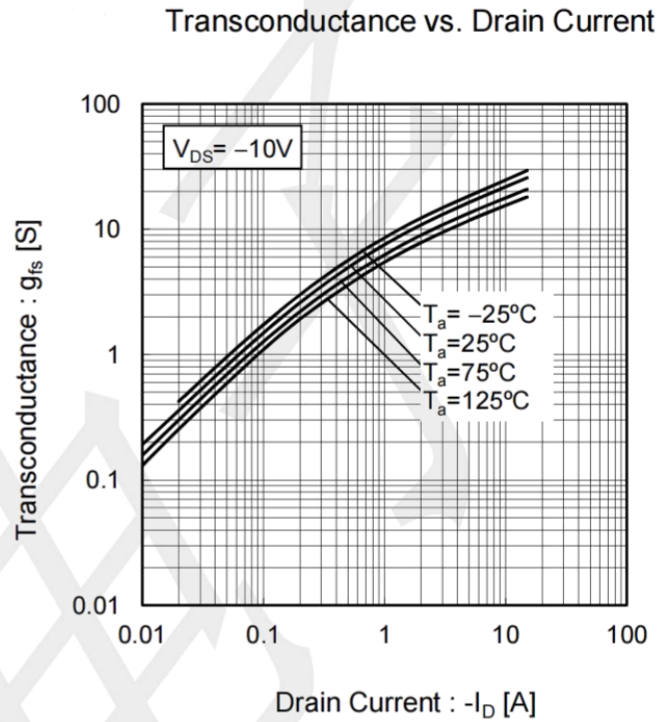
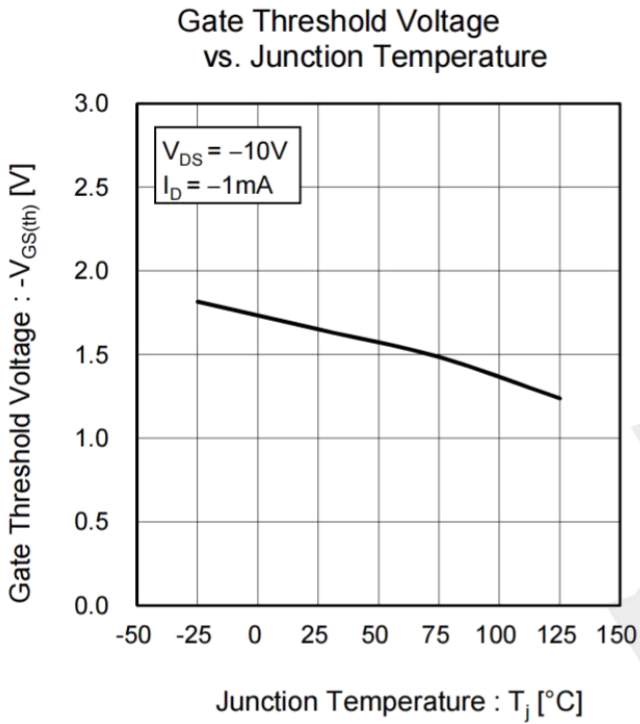
Avalanche Current vs Inductive Load



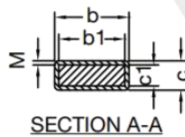
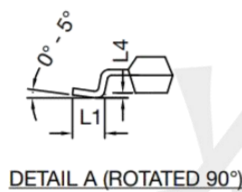
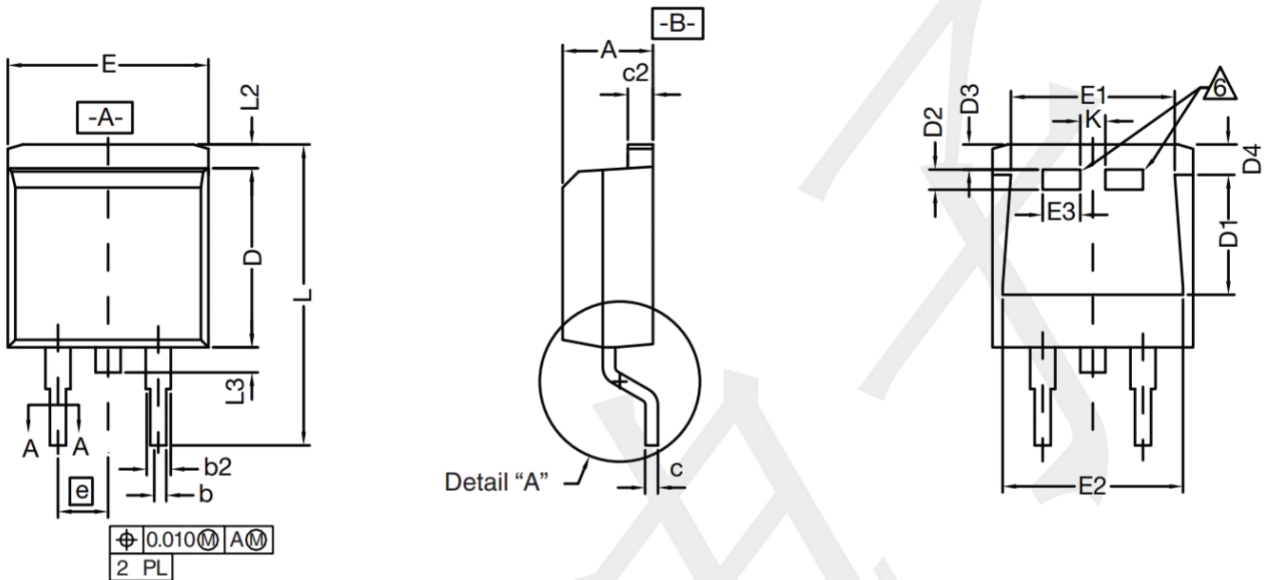
Avalanche Energy Derating Curve vs Junction Temperature



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Package Information TO-263



DIM.	INCHES		MILLIMETERS		
	MIN.	MAX.	MIN.	MAX.	
A	0.160	0.190	4.064	4.826	
b	0.020	0.039	0.508	0.990	
b1	0.020	0.035	0.508	0.889	
b2	0.045	0.055	1.143	1.397	
c*	Thin lead	0.013	0.018	0.330	0.457
	Thick lead	0.023	0.028	0.584	0.711
c1	Thin lead	0.013	0.017	0.330	0.431
	Thick lead	0.023	0.027	0.584	0.685
c2	0.045	0.055	1.143	1.397	
D	0.340	0.380	8.636	9.652	
D1	0.220	0.240	5.588	6.096	
D2	0.038	0.042	0.965	1.067	
D3	0.045	0.055	1.143	1.397	
D4	0.044	0.052	1.118	1.321	
E	0.380	0.410	9.652	10.414	
E1	0.245	-	6.223	-	
E2	0.355	0.375	9.017	9.525	
E3	0.072	0.078	1.829	1.981	
e	0.100 BSC		2.54 BSC		
K	0.045	0.055	1.143	1.397	
L	0.575	0.625	14.605	15.875	
L1	0.090	0.110	2.286	2.794	
L2	0.040	0.055	1.016	1.397	
L3	0.050	0.070	1.270	1.778	
L4	0.010 BSC		0.254 BSC		
M	-	0.002	-	0.050	

Notes

- Plane B includes maximum features of heat sink tab and plastic.
- No more than 25 % of L1 can fall above seating plane by max. 8 mils.
- Pin-to-pin coplanarity max. 4 mils.
- *: Thin lead is for SUB, SYB.
Thick lead is for SUM, SYM, SQM.
- Use inches as the primary measurement.
- △ This feature is for thick lead.

ECN: T13-0707-Rev. K, 30-Sep-13
DWG: 5843

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