

N-Channel Enhancement Mode Power MOSFET
PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(on)} MAX	I _D
30V	14.5mΩ@V _{GS} =10V	35A
	9.65mΩ@V _{GS} =4.5V	

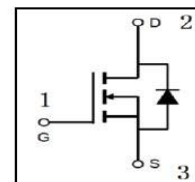
SCHEMATIC DIAGRAM

SPR3.3x3.3 PAK

PACKAGE



4 : GATE
5.6.7.8 : DRAIN
1.2.3 : SOURCE


GENERAL DESCRIPTION

- Super high dense cell trench design for low R_{DS(on)}.
- Rugged and reliable
- Surface Mount package

MECHANICAL DATA

- Case : Molded plastic, SPR3.3x3.3 PAK
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame retardant

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous	I _D	35	A
		20	
Pulsed Drain Current (Note 1)	I _{DM}	120	
Avalanche Current	I _{AS}	32	
Single Pulse Avalanche Energy	E _{AS}	23	mJ
Maximum Power Dissipation	P _D	2.5	W
		1.0	
Operating Junction and Storage Temperature Range	T _J ,T _{STG}	- 55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Case (Note 2)	R _{thJC}	25	°C/W
Thermal Resistance,Junction-to-Ambient (Note 2)	R _{thJA}	50	°C/W

Note:

1. Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.



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ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V , I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V , V _{GS} = 0V, T _j = 25°C			1	uA
		V _{DS} = 20V , V _{GS} = 0V , T _j = 125°C			10	
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V , V _{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.6	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 4.5V , I _D = 11A		8	14.5	mΩ
		V _{GS} = 10V , I _D = 13A		6	9.65	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 5V , I _D = 13A		40		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} = 15V , V _{GS} = 0V f = 1.0MHz		1190		pF
Output Capacitance	C _{OSS}			285		pF
Reverse Transfer Capacitance	C _{RSS}			170		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	td _(ON)	V _{DD} = 15V , I _D = 1A V _{GEN} = 10V R _{GEN} = 6 ohm		10		nS
Rise Time	tr			6		nS
Turn-Off Delay Time	td _(OFF)			32		nS
Fall Time	tf			7		nS
Total Gate Charge (4.5V)	Q _g	V _{DS} = 0.5V _{(BR)DSS} I _D = 8A V _{GS} = 10V		11		nC
Gate-Source Charge	Q _{gs}			4.5		nC
Gate-Drain Charge	Q _{gd}			5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Continuous Current	I _s				2.5	A
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} = 0V , I _s = I _F			1	V

Note:

3. Pulse Test Pulse width ≤ 300us , Duty Cycle ≤ 2% .

4. Independent of operating temperature.



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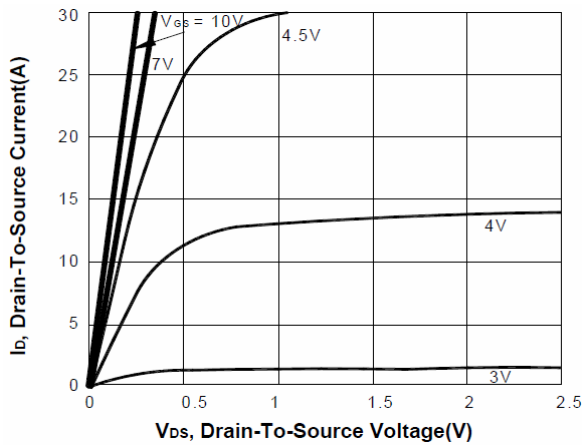


Figure 1. Output Characteristics

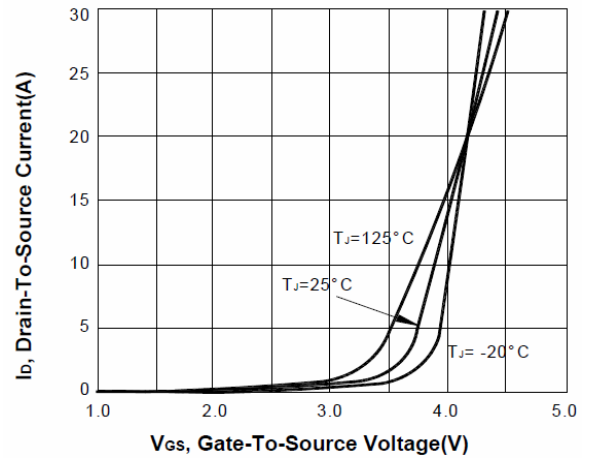


Figure 2. Transfer Characteristics

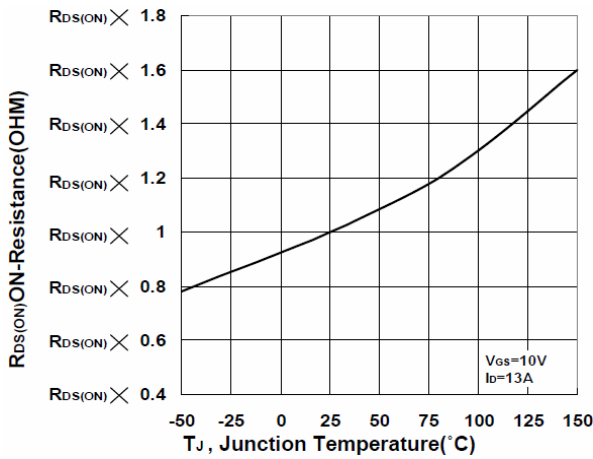


Figure 3. On-Resistance VS Temperature

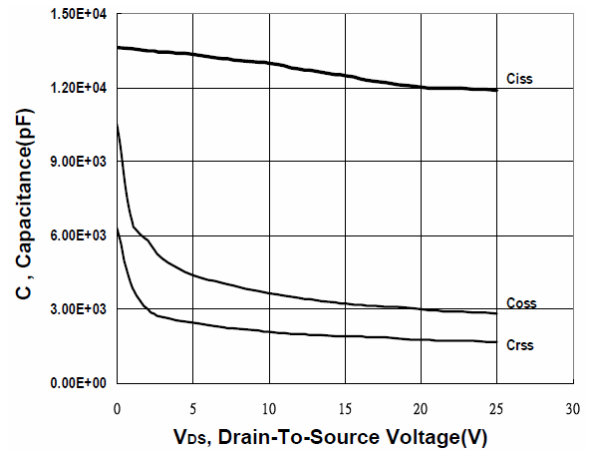


Figure 4. Capacitance Characteristic

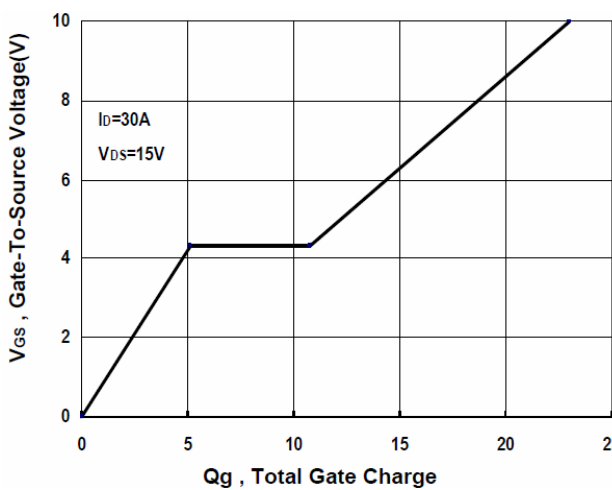


Figure 5. Gate charge Characteristics

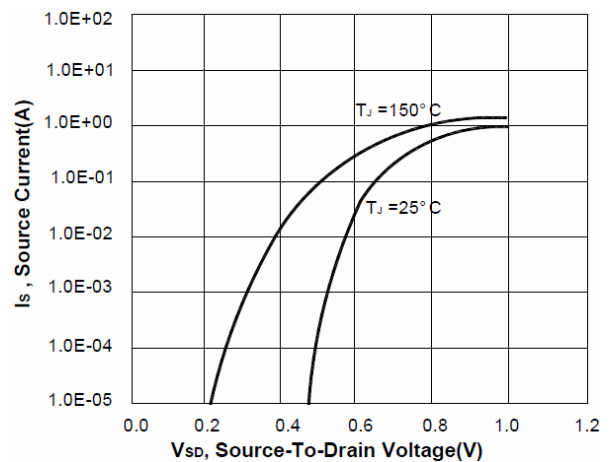


Figure 6. Source-Drain Diode Forward Voltage



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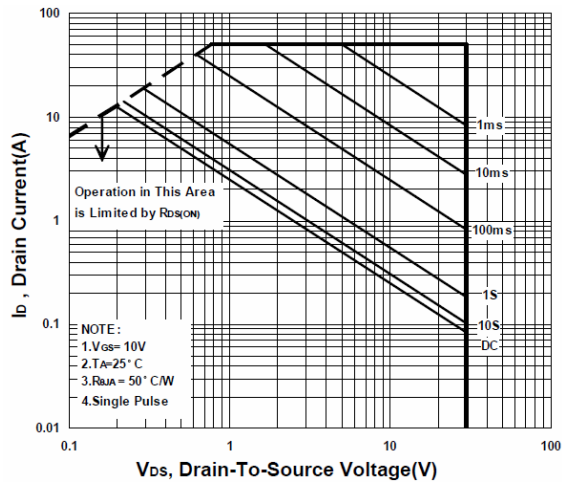


Figure 7. Safe Operating Area

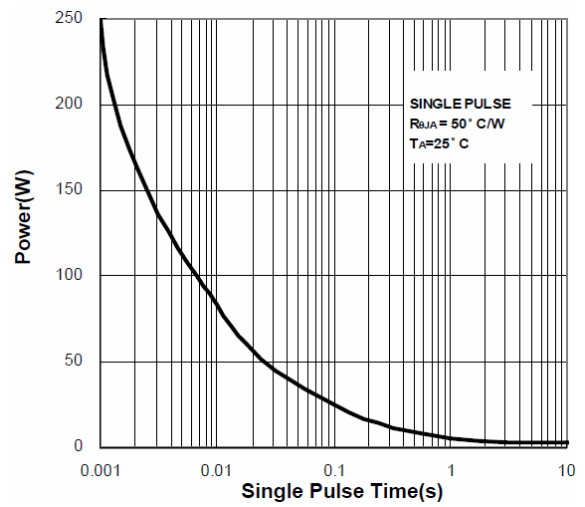


Figure 8 Single Pulse Maximum Power Dissipation

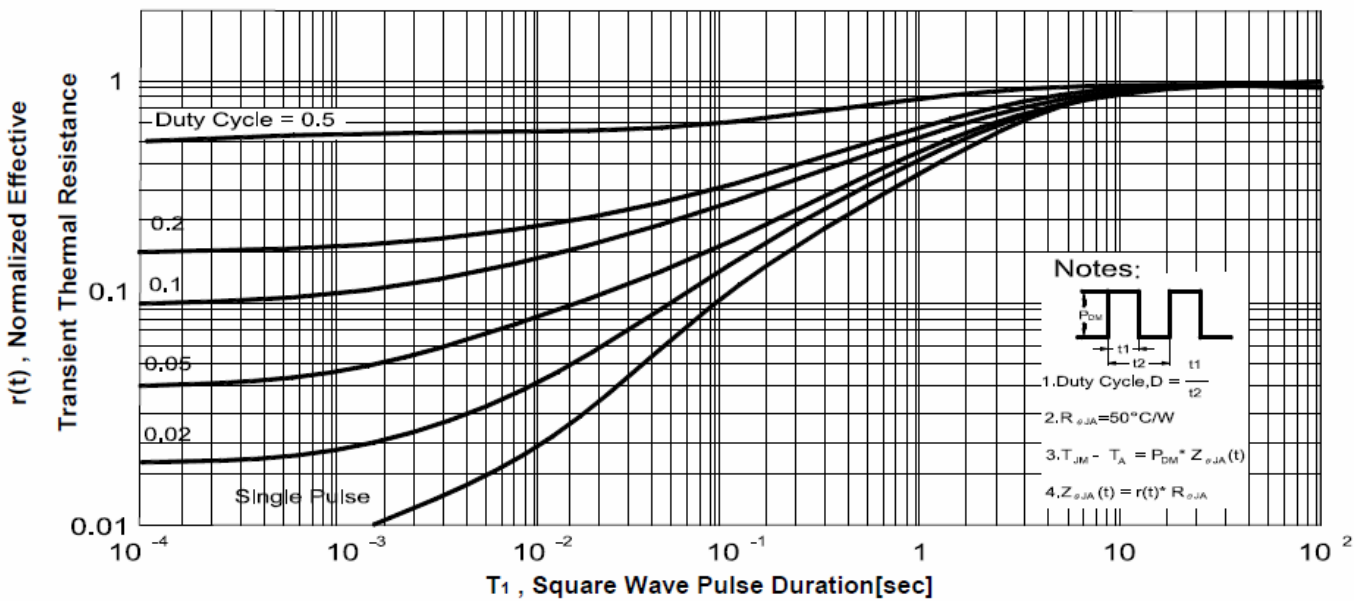
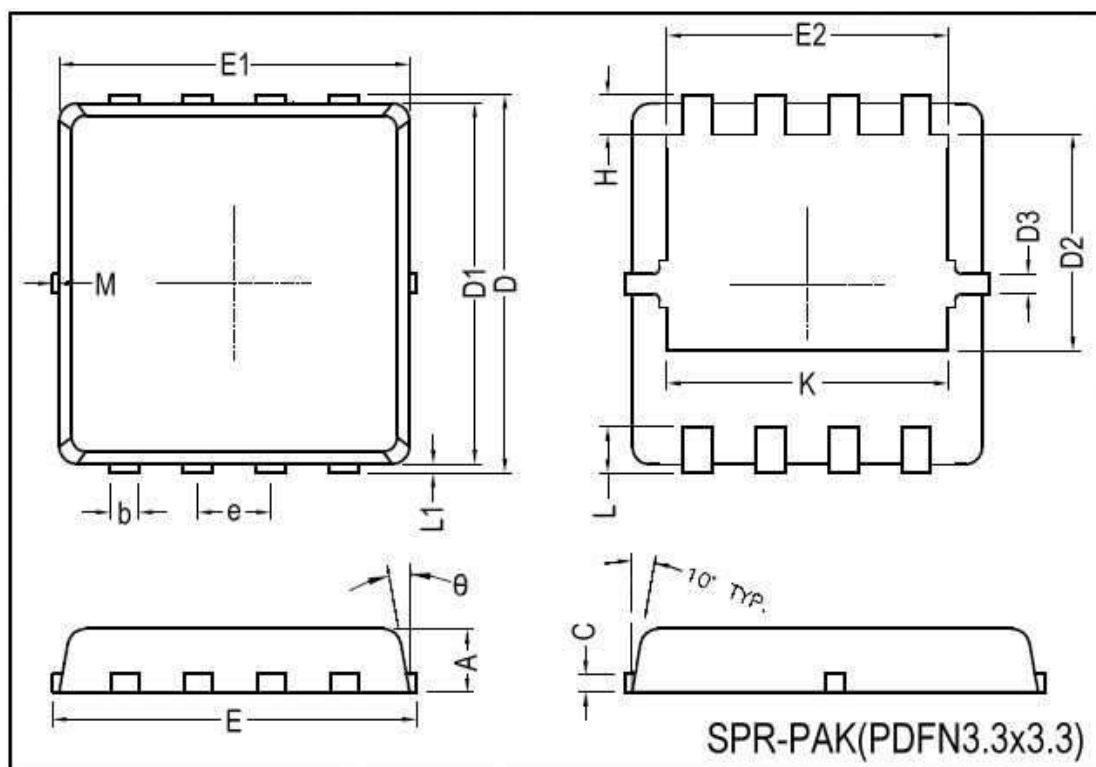


Figure 9. Transient Thermal Response Curve



Outline Drawing

SPR(3.3x3.3)PAK



REF.	Millimeter			REF.	Millimeter		
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	0.70	0.75	0.85	E1	2.95	3.15	3.20
b	0.25	0.30	0.35	E2	2.30	2.49	2.59
C	0.10	0.15	0.25	e	0.65 BSC		
D	3.15	3.35	3.45	H	0.30	0.42	0.53
D1	2.95	3.10	3.20	L	0.30	0.40	0.50
D2	1.48	1.71	1.98	L1	-	0.13	
D3	-	0.13	-	θ	-	10°	12°
E	3.05	3.30	3.40	M	-	-	0.15

Dimensions in inches and (millimeters)

Rev.E



Ordering Information:

Device PN	Packing
SSPR4410-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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