

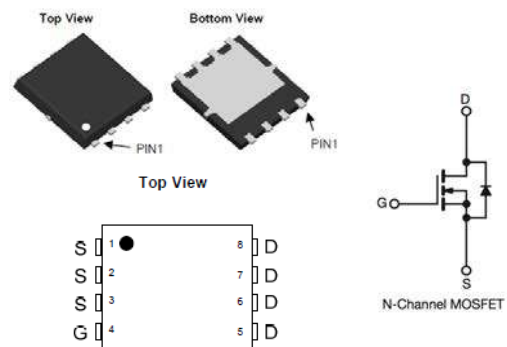
PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(on)} Max.	I _D
60V	2.5mΩ@V _{GS} =10V	118A
	4.1mΩ@V _{GS} =4.5V	

FEATURES

- High Power and Current Handling Capability
- Surface Mount Package

PR-PAK PACKAGE



APPLICATION

- Notebook AC-in load switch
- Battery protection charge/discharge

Absolute Maximum Ratings @T_A=25°C unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DSS}	60	V
Gate-Source Voltage		V _{GSS}	± 20	V
Drain Current (Continuous) *A	T _C =25°C	I _D	118	A
	T _C =100°C		74	
	T _A =25°C		30	
	T _A =70°C		24	
Drain Current (Pulse) *B		I _{DM}	200	A
Power Dissipation	T _C =25°C	P _D	83	W
	T _C =100°C		33	
	T _A =25°C		5.4	
	T _A =70°C		3.5	
Operating Temperature/ Storage Temperature		T _J /T _{STG}	-55~150	°C

Thermal Resistance Ratings

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	$t \leq 10 \text{ s}$	R_{thJA}	18	23	$^{\circ}\text{C/W}$
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1	1.5	

Electrical Characteristics @T_A=25°C unless otherwise noted

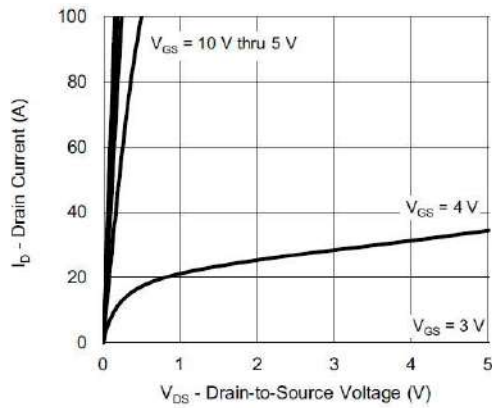
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	2	3	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$	--	1.9	2.5	m Ω
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 20A$	--	3.1	4.1	m Ω
Diode Forward Voltage	V_{SD}	$I_{SD} = 1A, V_{GS} = 0V$	--	0.68	1.2	V
Diode Forward Current *AC	I_S	$T_C = 25^\circ C$	--	--	118	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 10A$	--	58	--	nC
Gate-Source Charge	Q_{gs}		--	16	--	nC
Gate-Drain Charge	Q_{gd}		--	8	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V, R_L = 3\Omega, I_D = 10A,$ $V_{GEN} = 10V, R_g = 1\Omega$	--	18	--	ns
Turn-on Rise Time	t_r		--	8	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	30	--	ns
Turn-Off Fall Time	t_f		--	6.5	--	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1.0MHz$	--	6010	--	pF
Output Capacitance	C_{oss}		--	1150	--	pF
Reverse Transfer Capacitance	C_{rss}		--	60	--	pF

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

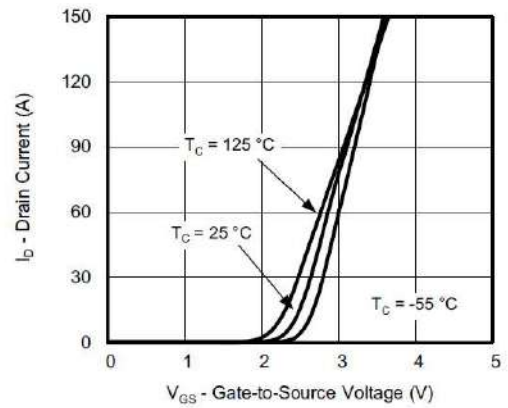
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the $t \leq 10$ s junction to ambient thermal resistance rating.

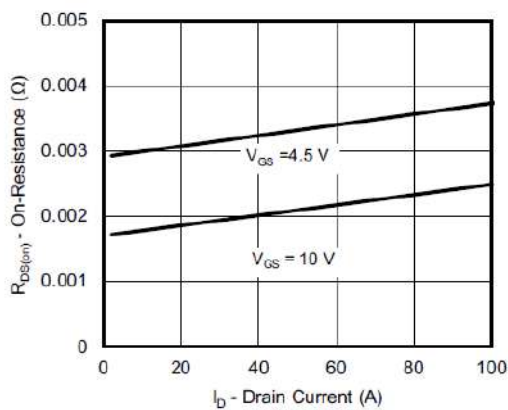
Typical Performance Characteristics (TJ = 25 °C, unless otherwise noted)



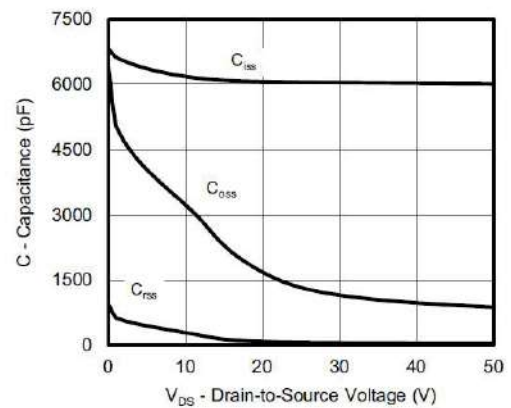
Output Characteristics



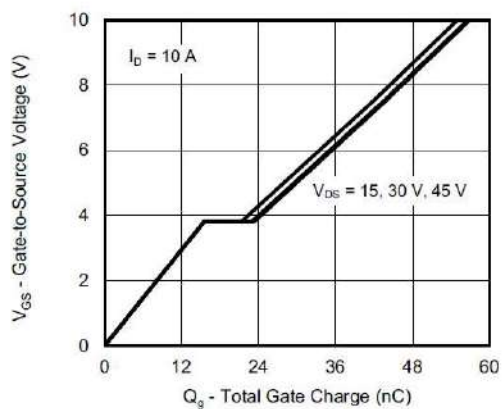
Transfer Characteristics



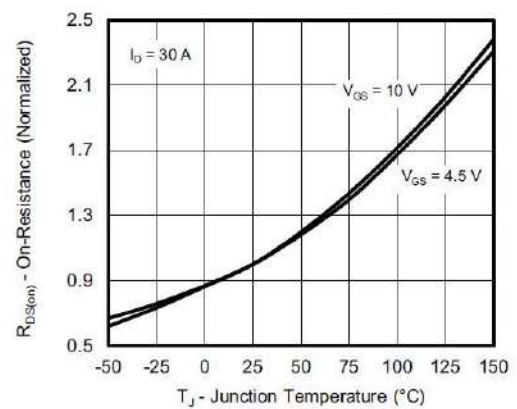
On-Resistance vs. Drain Current and Gate Voltage



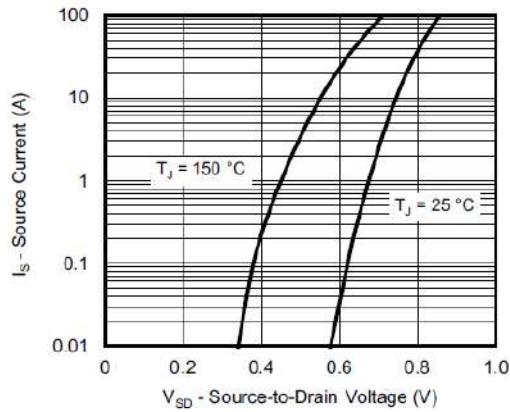
Capacitance



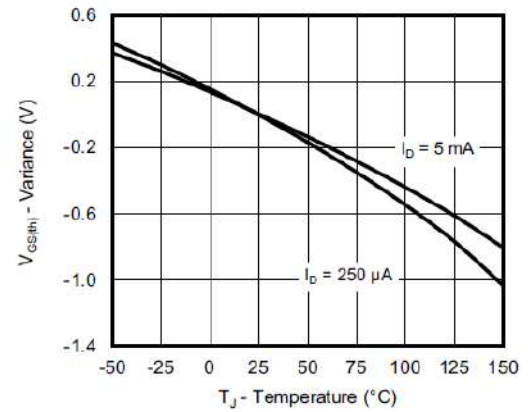
Gate Charge



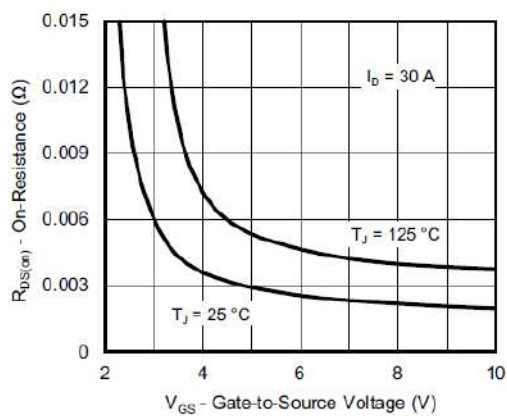
On-Resistance vs. Junction Temperature



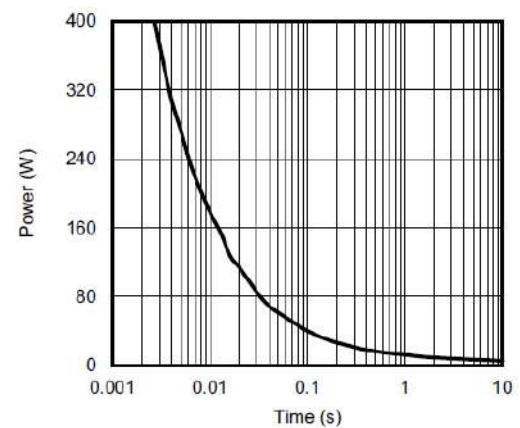
Source-Drain Diode Forward Voltage



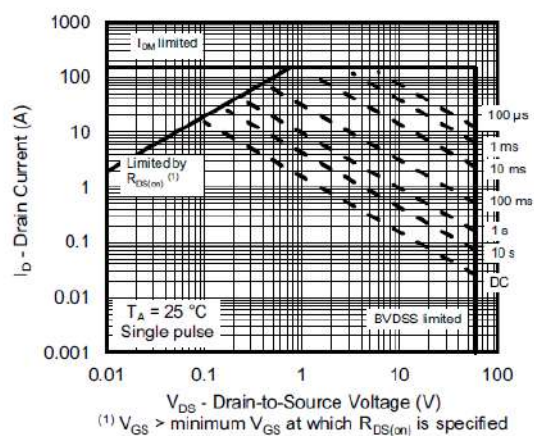
Threshold Voltage



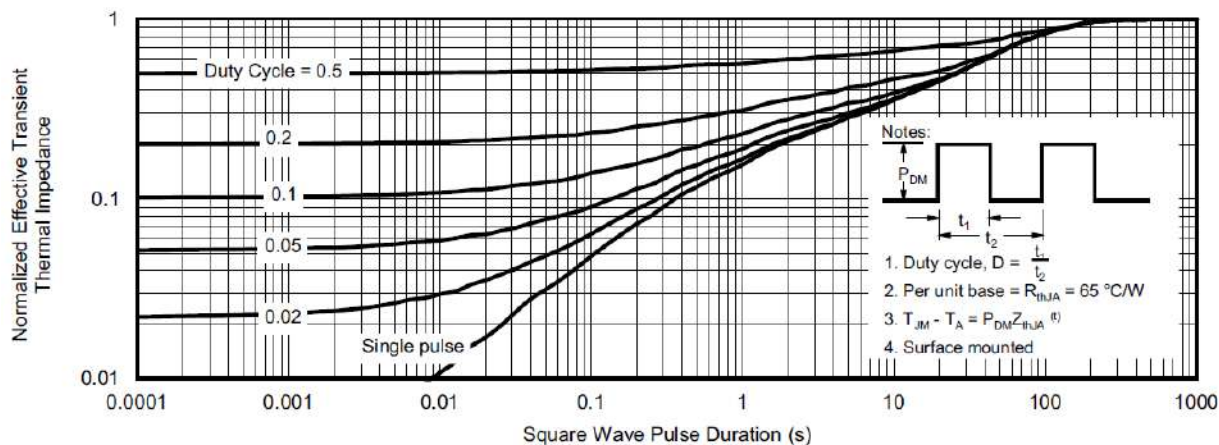
On-Resistance vs. Gate-to-Source Voltage



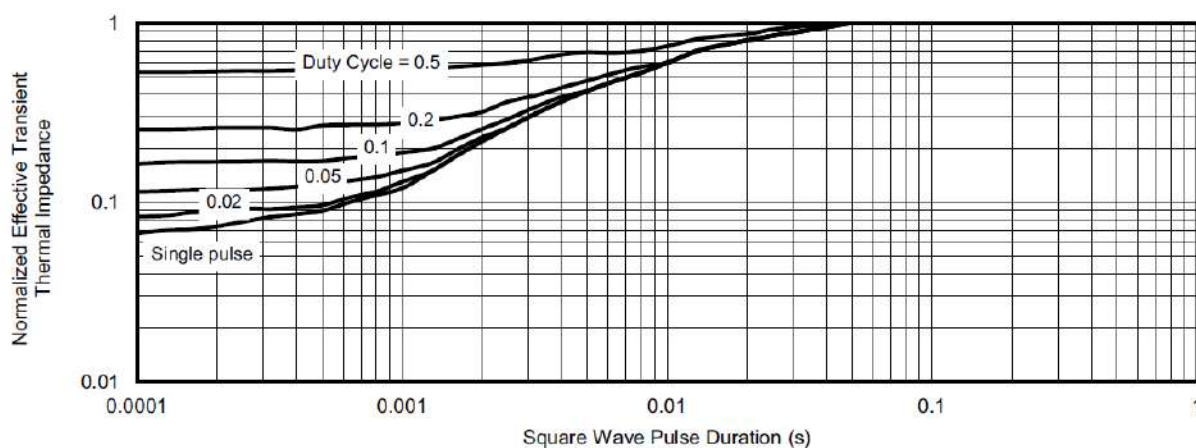
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



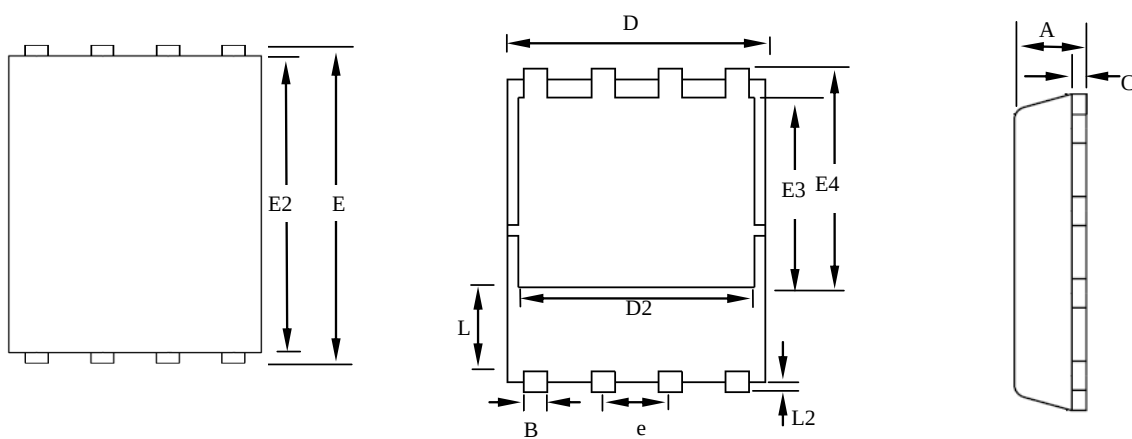
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

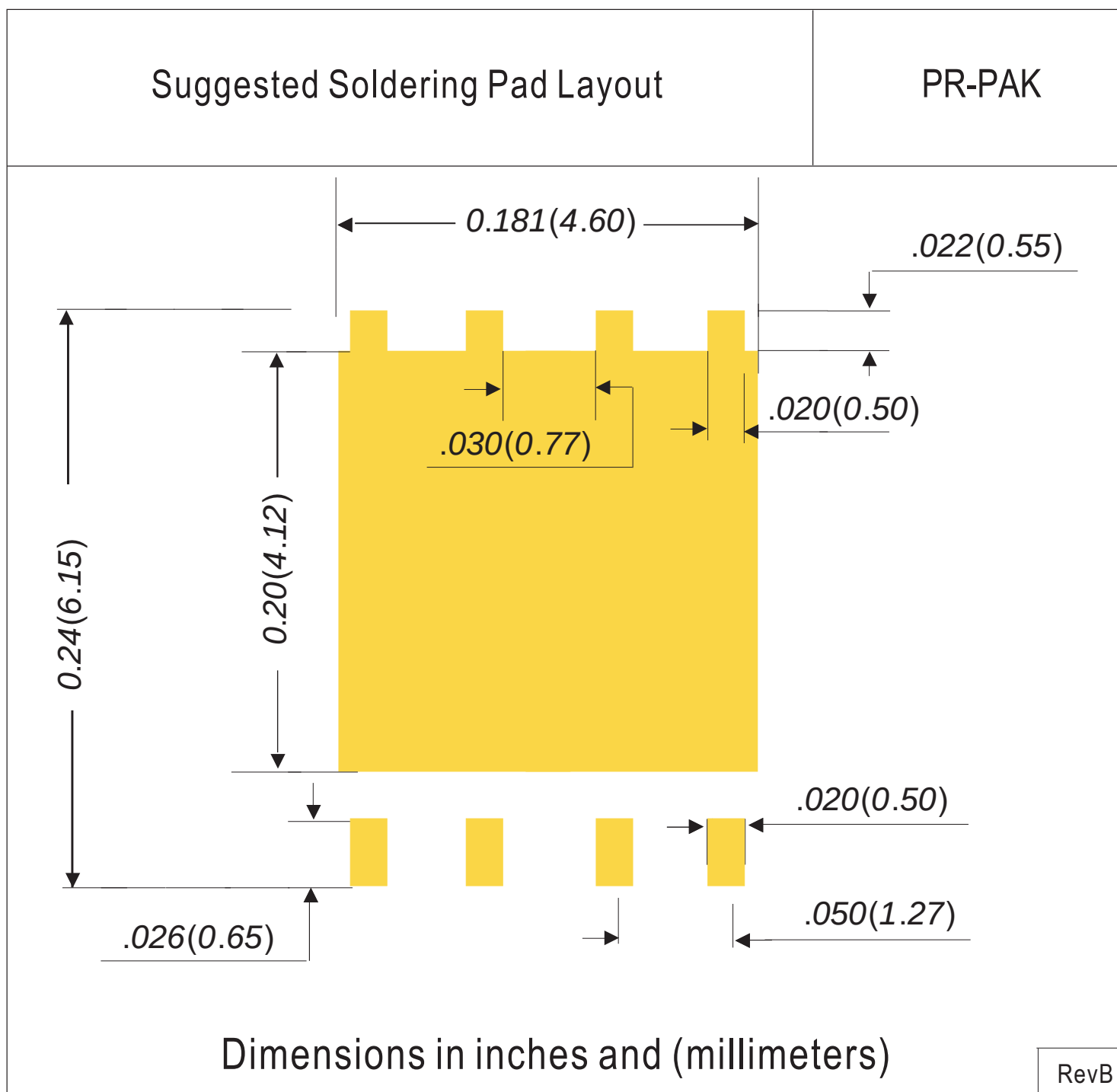
Outline Drawing

PR-PAK



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	--	1.20	0.031	--	0.047
B	0.30	--	0.51	0.012	--	0.020
C	0.15	--	0.35	0.006	--	0.014
D	4.80	--	5.30	0.189	--	0.209
D2	3.61	--	4.35	0.142	--	0.171
E	5.90	--	6.35	0.232	--	0.250
E2	5.42	--	5.90	0.213	--	0.232
E3	3.23	--	3.90	0.127	--	0.154
E4	3.69	--	4.55	0.145		0.179
L	0.61	--	1.80	0.024	--	0.071
L2	0.05	--	0.36	0.002	--	0.014
e	--	1.27	--	--	0.050	--

Rev.A



Ordering Information:

Device PN	Packing
SPR60N118 -T ⁽¹⁾ G ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 5 Kpcs/Reel

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

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

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

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