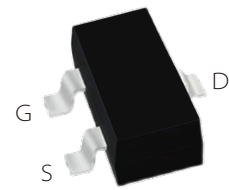


FEATURES

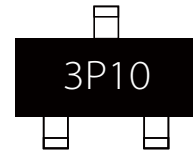
- | Super Low Gate Charge
- | 100% EAS Guaranteed
- | Green Device Available
- | Excellent CdV/dt effect decline
- | Advanced high cell density Trench technology

APPROVALS

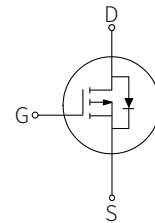
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



SOT23-3L



Marking



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Rating	Unit
Drain-Source Voltage	V_{DS}		-100	V
Gate-Source Voltage	V_{GS}		± 20	V
Continuous Drain Current, V_{GS} @ -10V ¹	I_D	@ $T_C=25^\circ\text{C}$	-3	A
Continuous Drain Current, V_{GS} @ -10V ¹	I_D	@ $T_C=100^\circ\text{C}$	-1.2	A
Continuous Drain Current, V_{GS} @ -10V ¹	I_D	@ $T_A = 25^\circ\text{C}$	-0.75	A
Continuous Drain Current, V_{GS} @ -10V ¹	I_D	@ $T_A = 70^\circ\text{C}$	-0.6	A
Pulsed Drain Current ²	I_{DM}		-6.0	A
Single Pulse Avalanche Energy ³	EAS	$T_A = 25^\circ\text{C}$	14.5	mJ
Avalanche Current	I_{AS}		-4.5	A
Total Power Dissipation ⁴	P_D	@ $T_C=25^\circ\text{C}$	10	W
Total Power Dissipation ⁴	P_D	@ $T_A=25^\circ\text{C}$	2.0	W
Storage Temperature Range	T_{STG}		-55~+150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J		-55~+150	$^\circ\text{C}$
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$		72	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$		8.0	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =-250μA	-100			V
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-80V, V _{GS} =0V, T _J =25°C			-1	μA
		V _{DS} =-80V, V _{GS} =0V, T _J =85°C			-30	μA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250μA	-1.2		-2.5	V
Static Drain-Source On-Resistance ²	R _{DS(on)}	V _{GS} =-10V, I _D =-3A		180	220	mΩ
		V _{GS} =-4.5V, I _{DS} =-2A		210	255	mΩ
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz		13		Ω
Total Gate Charge (-10V)	Q _g	V _{DS} = -50 V, V _{GS} = -10 V I _D = -2 A		19		nC
Gate-Source Charge	Q _{gs}			3.4		nC
Gate-Drain Charge	Q _{gd}			2.9		nC
Turn-on Delay Time	t _{d(on)}	V _{DD} =-30V, V _{GS} =-10V R _G =3.3Ω, I _D =-1A		9		ns
Rise Time	t _r			6		ns
Turn-Off Delay Time	t _{d(off)}			39		ns
Fall Time	t _f			33		ns
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V f=1MHz		1228		pF
Output Capacitance	C _{oss}			41		pF
Reverse Transfer Capacitance	C _{rss}			29		pF

DIODE CHARACTERISTICS

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current ^{1,5}	I _S	V _G =V _D =0V, Force Current			3	A
Diode Forward Voltage ²	V _{DS}	V _{GS} =0V, I _S =-1A, T _J =25°C			-1.2	V

PARAMETER CHARACTERISTIC CURVE

Figure 1: Typical Output Characteristics

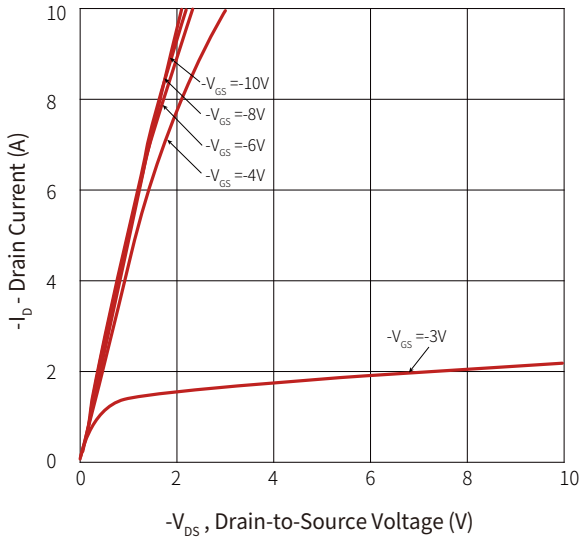


Figure 2: On-Resistance vs G-S Voltage

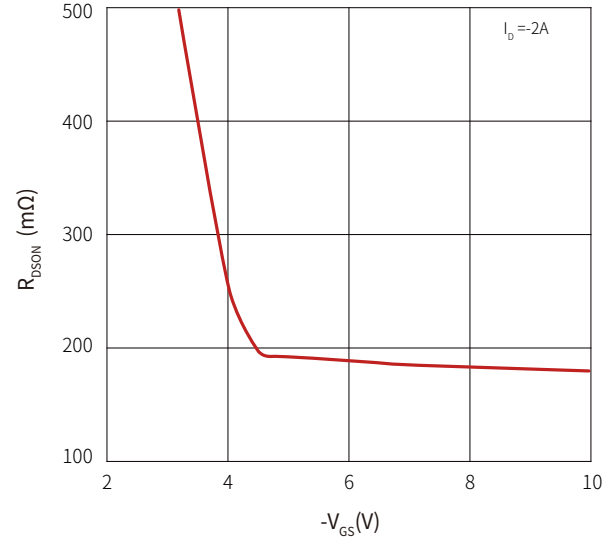


Figure 3: Source Drain Forward Characteristics

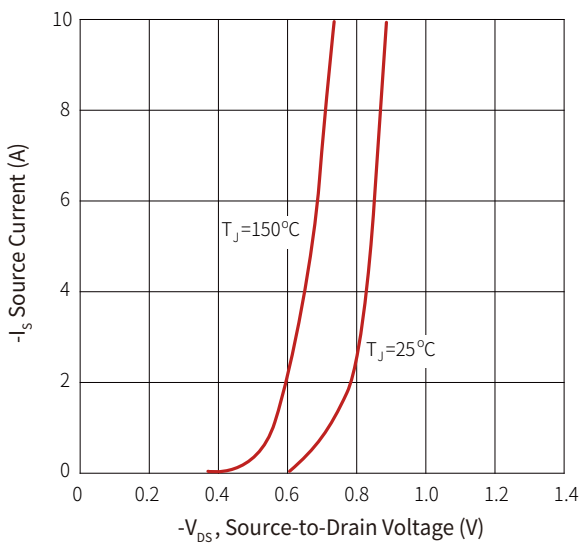


Figure 4: Gate-Charge Characteristics

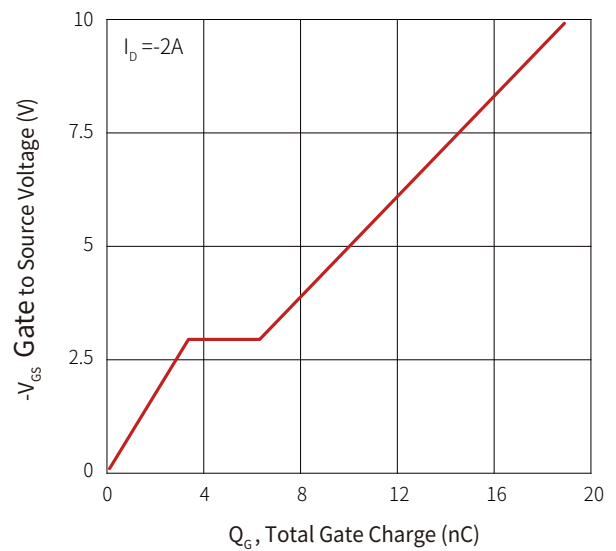


Figure 5: Normalized $V_{GS(th)}$ vs T_J

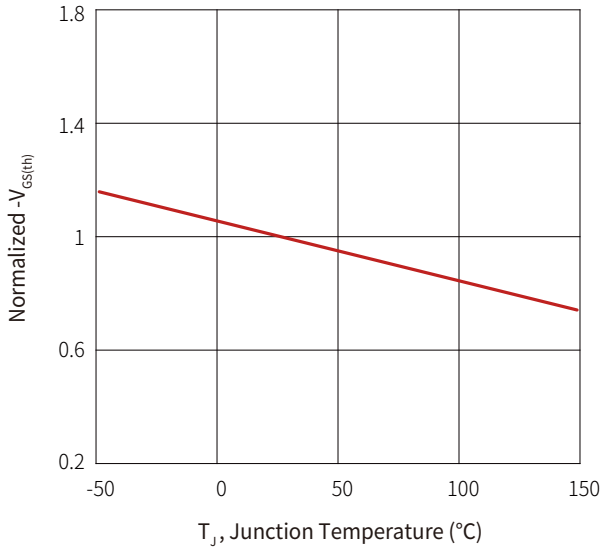


Figure 6: Normalized $R_{DS(on)}$ vs T_J

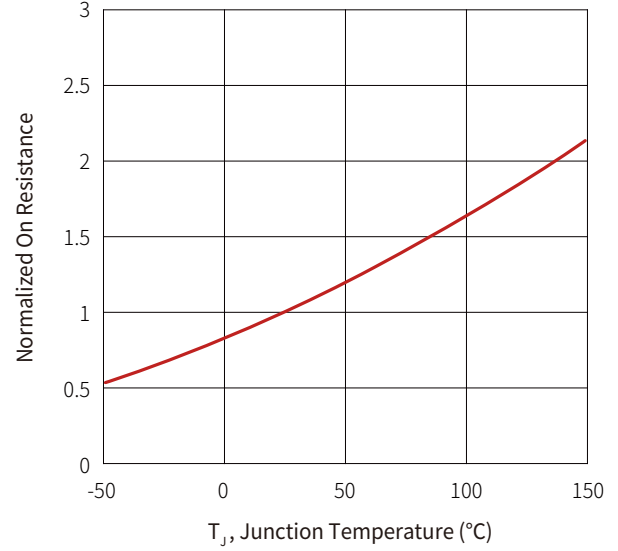


Figure 7: Capacitance

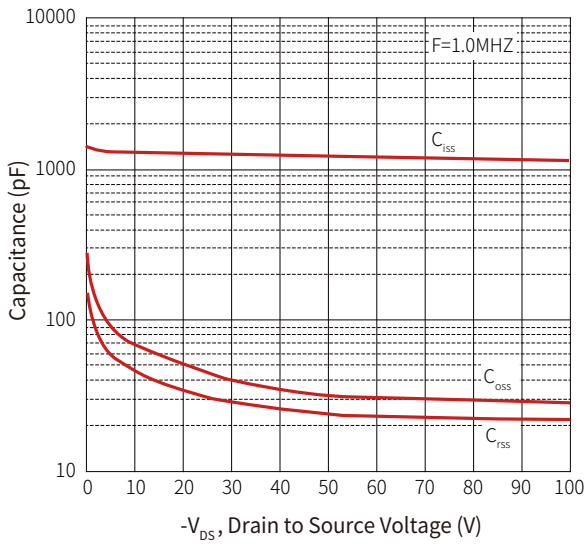


Figure 8: Safe Operating Area

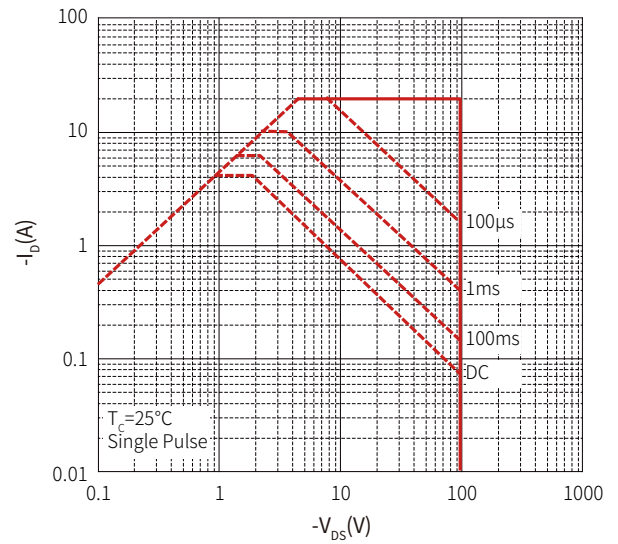


Figure 9: Normalized Maximum Transient Thermal Impedance

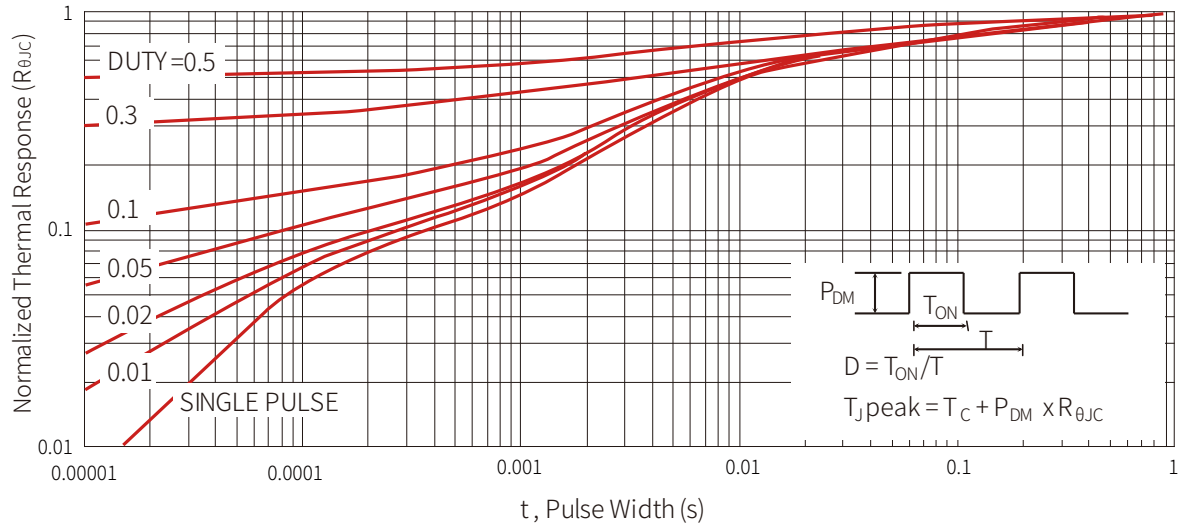


Figure 10: Switching Time Waveform

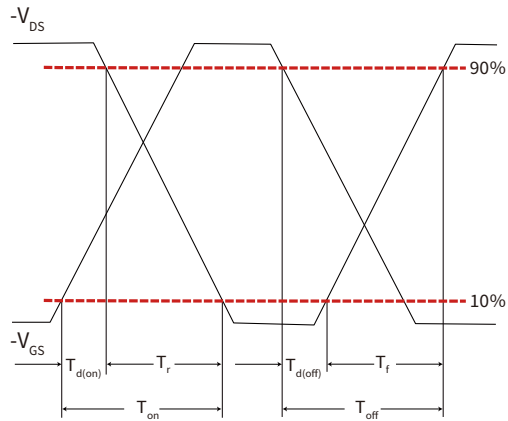
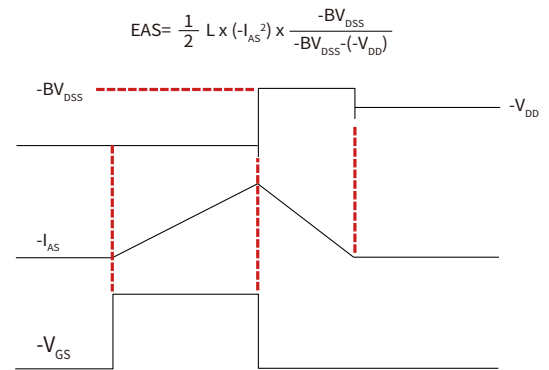
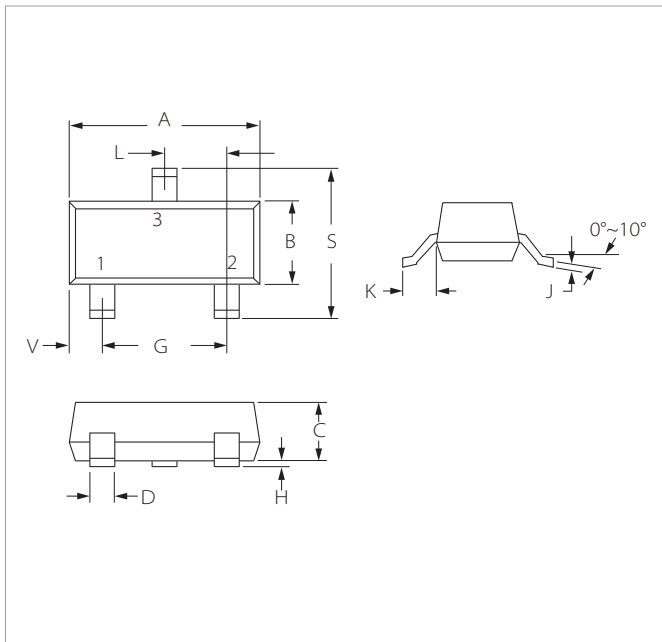


Figure 11: Unclamped Inductive Waveform



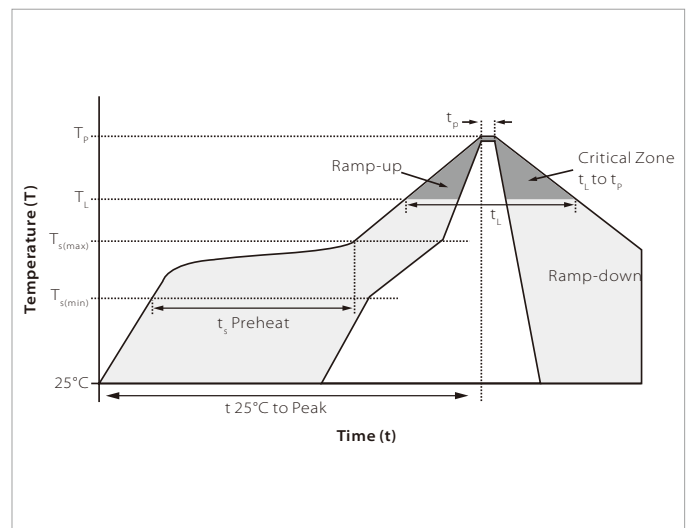
SOT23-3L PACKAGE INFORMATION



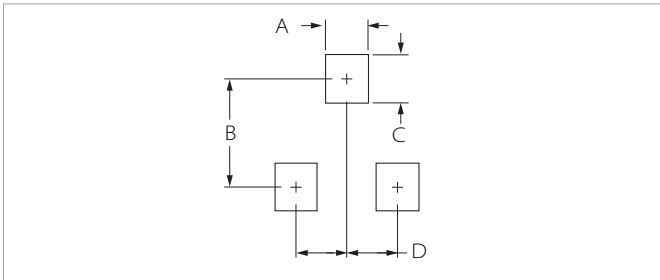
Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.04	0.110	0.120
B	1.20	1.40	0.047	0.055
C	1.00	1.15	0.039	0.045
D	0.37	0.50	0.015	0.020
G	1.78	2.04	0.070	0.081
H	0.01	0.10	0.001	0.004
J	0.08	0.18	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.64	0.083	0.104
V	0.45	0.60	0.018	0.024

SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM03P10	SOT23-3L	3000PCS	7"

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