CRMYP5N25A

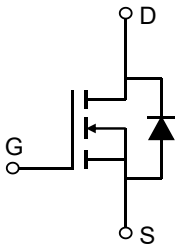
N-Channel 250V, 480mΩ Typ. Power MOSFET

Description

Features

- 250V, 3A

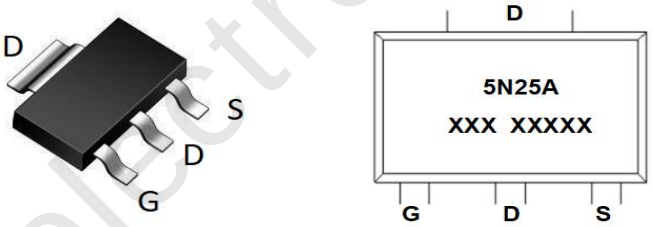
  $R_{DS(ON)}$ Typ = 480mΩ @ V_{GS} = 10V
- Fast Switching
- Improved dv/dt Capability
- Lead Free



Schematic Diagram

Application

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMYP5N25A	5N25A	SOT-223-3L	TAPING	13"	4000	48000

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		250	V
V_{GS}	Gate-to-Source Voltage		±30	V
I_D	Continuous Drain Current	T_A = 25°C	3	A
		T_A = 100°C	1.8	A
I_{DM}	Pulsed Drain Current (1)		12	A
P_D	Power Dissipation	T_A = 25°C	8.9	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		14	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	250	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 250V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.0	3.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 1.5A	-	480	576	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	465	-	pF
C_{oss}	Output Capacitance		-	68	-	pF
C_{rss}	Reverse Transfer Capacitance		-	9.5	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V, V_{DS} = 200V, I_D = 3A	-	10	-	nC
Q_{gs}	Gate Source Charge		-	3	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	5.2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 150V, I_D= 3A, R_{GEN} = 25Ω	-	6	-	ns
t_r	Turn-On Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	22	-	ns
t_f	Turn-Off Fall Time		-	24	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	3	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 3A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 3A, di/dt = 100A/us	-	423	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	4.3	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

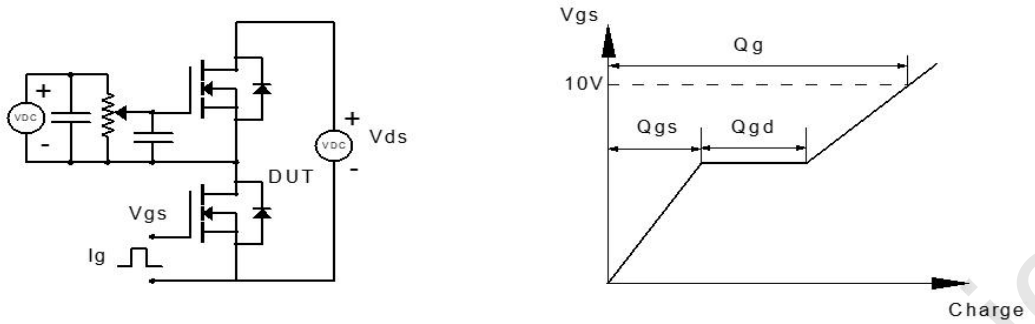


Figure 1: Gate Charge Test Circuit & Waveform

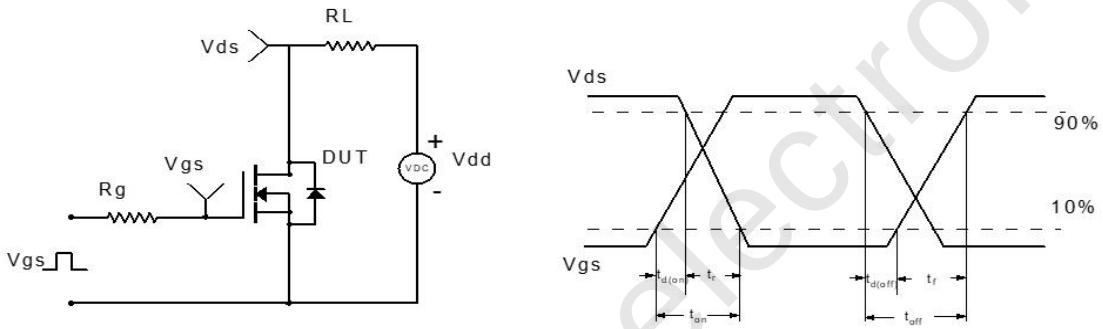


Figure 2: Resistive Switching Test Circuit & Waveform

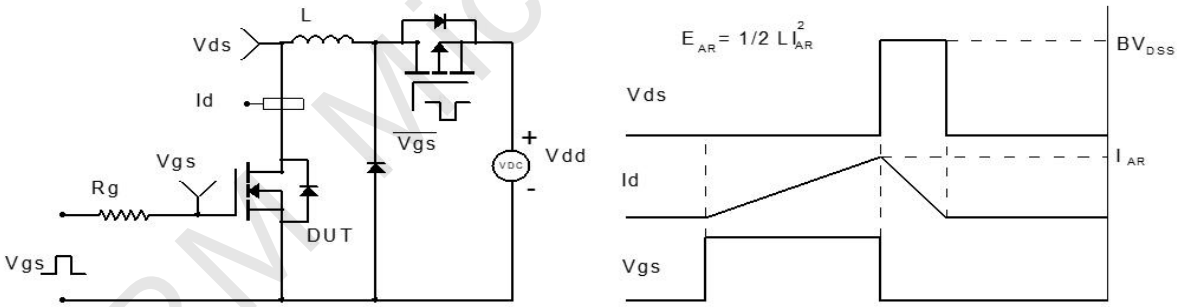


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

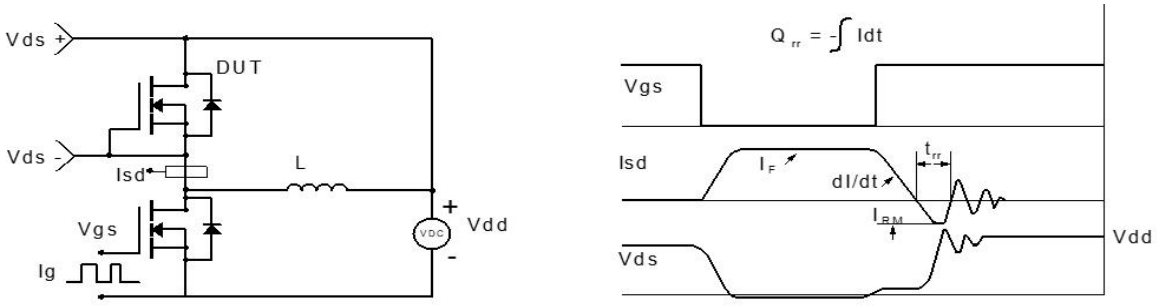
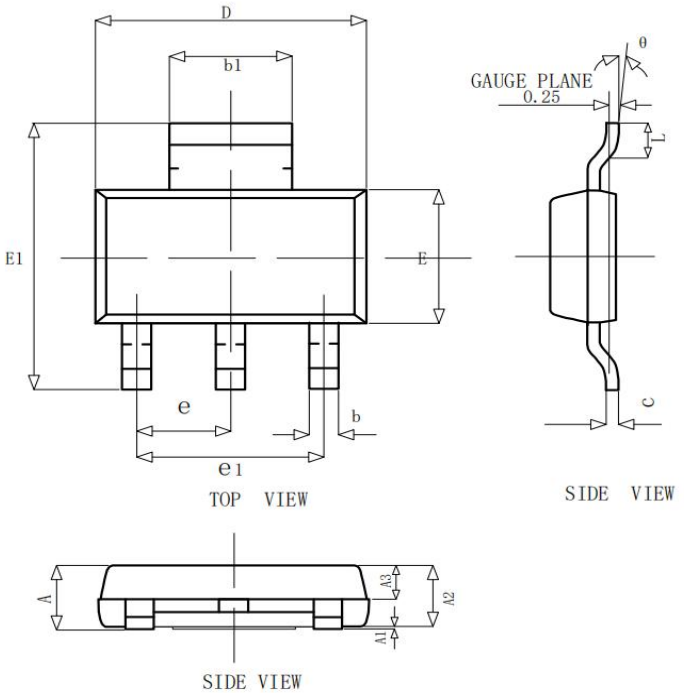


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-223-3L)



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	——	——	1.80
A1	0.00	0.05	0.10
A2	1.50	1.60	1.70
A3	0.85	0.90	0.95
b	0.66	0.70	0.80
b1	2.96	3.00	3.10
c	0.25	0.30	0.35
D	6.30	6.50	6.70
E	3.30	3.50	3.70
E1	6.80	7.00	7.20
e		2.3BSC	
e1	4.40	4.60	4.80
L	0.90	——	1.15
θ	0°	5°	10°

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