RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RM25N500T7

N-Channel Power MOSFET

Features

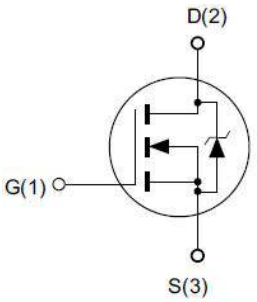
- ◆ 500V, 25A, $R_{DS(ON)}$(Typ.)= 0.18Ω@VGS = 10V.
- ◆ Low Crss
- ◆ Fast Switching
- ◆ 100% Avalanche Tested
- ◆ Halogen-free

Application

- ◆ Adaptor
- ◆ Standby Power
- ◆ Switching power supply
- ◆ LED Power

TO-247





Device Marking	Device	Device Package	Packaging Code	Tube (Pcs)	Carton(Pcs)
25N500	RM25N500T7	TO-247	-C	30	1800

Absolute Maximum Ratings T_C = 25° C unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage [a]	500	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Drain Current-Continuous, T_C = 25°C	25	A
	Drain Current-Continuous, T_C = 100°C	15.7	A
I_{DM}	Drain Current-Pulsed [b]	100	A
P_D	Maximum Power Dissipation @ T_J = 25°C	300	W
dv/dt	Peak Diode Recovery dv/dt [c]	5.0	V/ns
E_{AS}	Single Pulsed Avalanche Energy [d]	1445	mJ
T_J, T_{STG}	Operating and Store Temperature Range	150，-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.42	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	°C/W

Electrical Characteristics T_J= 25° C unless otherwise noted

Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	500	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 500V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
V_{GS}(th)	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D =250μA	2		4	V

On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
R_{DS}(on)	Static Drain-Source On-Resistance	V_{GS} = 10V, I_D = 12.5A	-	0.18	0.22	Ω
g_{fs}	Forward Transconductance	V_{DS}=15V, I_D=12.5A	-	18	-	S

Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Ciss	Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	3487	-	pF
Coss	Output Capacitance		-	214	-	pF
Crss	Reverse Transfer Capacitance		-	10	-	pF

On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 250V, I_D =25A, V_{GS}=10V	-	37.2	-	ns
t_r	Turn-On Rise Time		-	64.4	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	86.8	-	ns
t_f	Turn-Off Fall Time		-	46	-	ns
Qg	Total Gate Charge	V_{DS} = 400V, I_D =25A, V_{GS} = 10V	-	64		nC
Qgs	Gate-Source Charge		-	17	-	nC
Qgd	Gate-Drain Charge		-	23	-	nC

Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	V_{GS} = 0V	-	-	25	A
I_{SM}	Maximum Pulsed Current	V_{GS} = 0V	-	-	100	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0V, I_S = 25A	-	-	1.5	V
Trr	Body Diode Reverse Recovery Time	I_S=25A,V_{GS} = 0V dI_F/dt=100A/us	-	490	-	ns
Qrr	Body Diode Reverse Recovery Charge	I_S=25A,V_{GS} = 0V dI_F/dt=100A/us	-	6246	-	nC

Notes:

a. T_J=+25 ℃ to +150 ℃

b. Repetitive rating; pulse width limited by maximum junction temperature.

c. I_{SD} =25A, d_{IF}/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃ 。

d. L = 10mH, V_{DD}=50V,I_{AS} = 17A,R_G=25Ω Starting T_J=25 ℃ .

RATING AND CHARACTERISTICS CURVES (RM25N500T7)

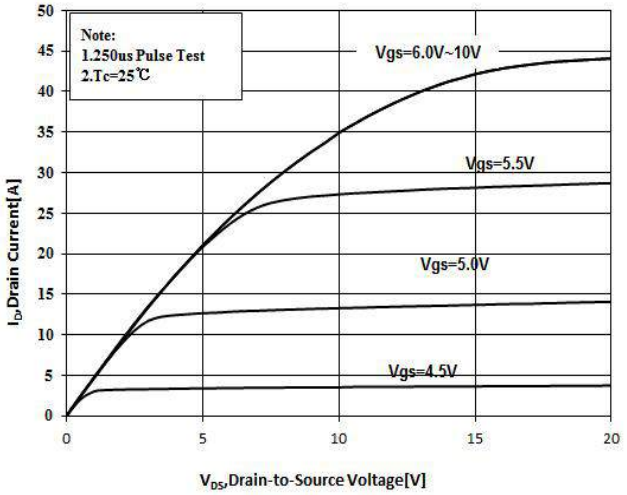


Figure 1. Typical Output Characteristics

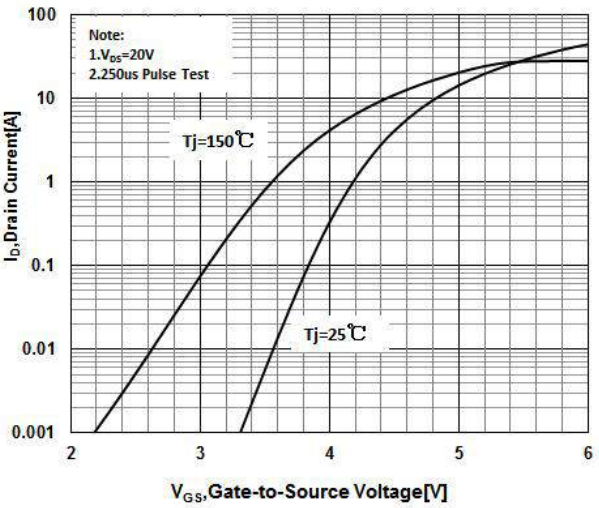


Figure 2. Typical Transfer Characteristics

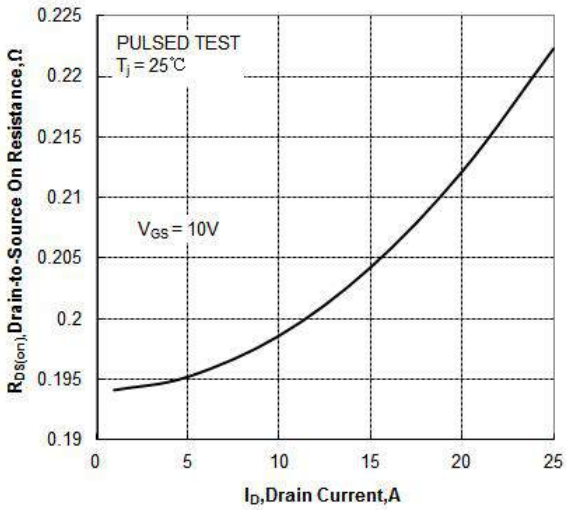


Figure 3. On- Resistance vs. Drain Current

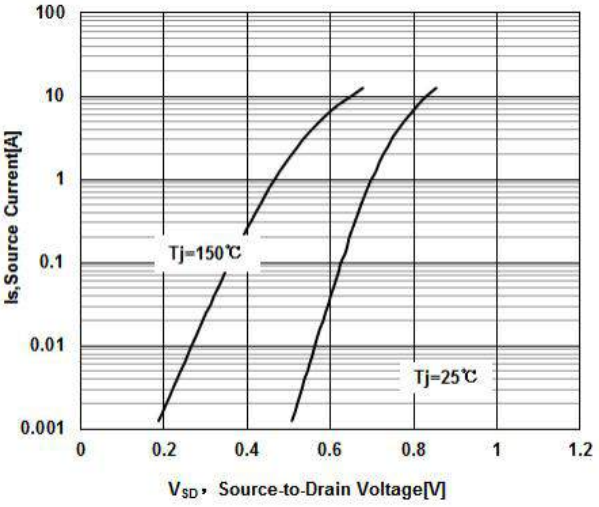


Figure 4.Body-Diode Characteristics

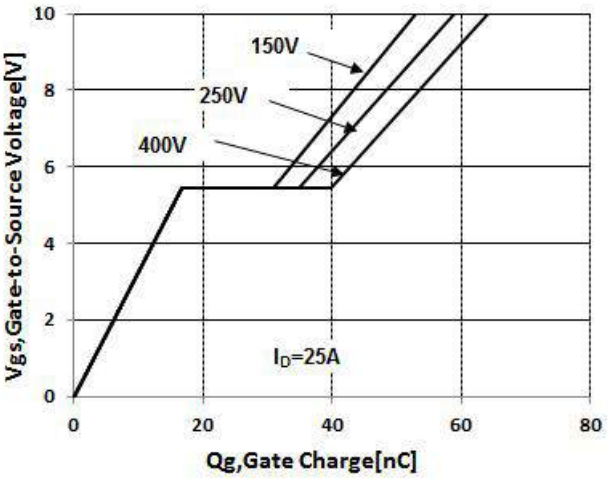


Figure 5. Gate-Charge Characteristics

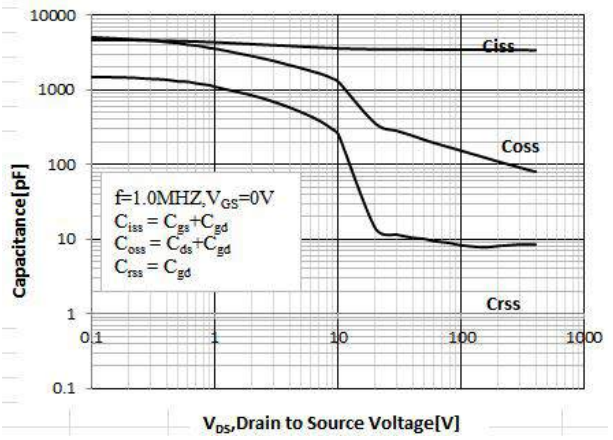


Figure 6.Capacitance Characteristics

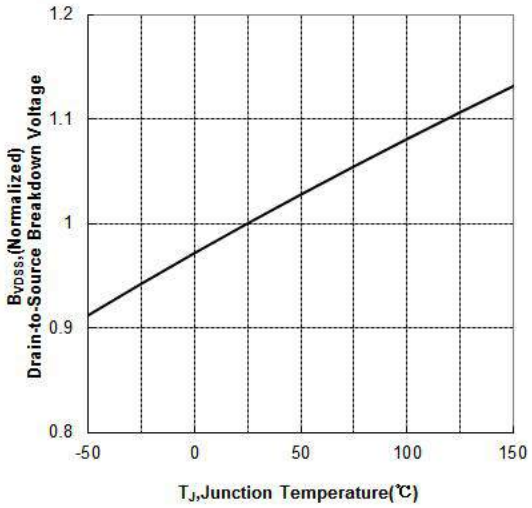


Figure 7.Normalized Breakdown voltage vs. Junction Temperature

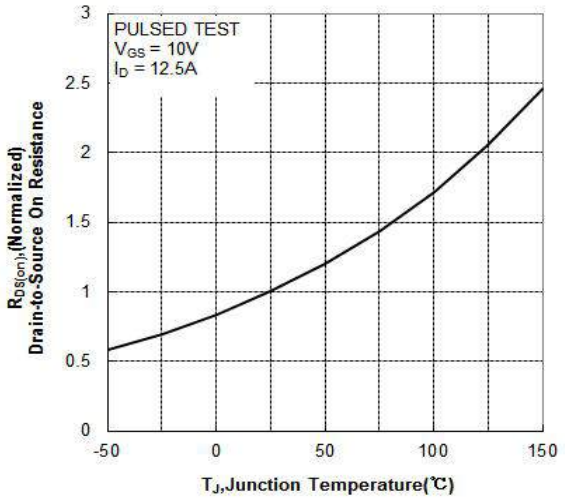


Figure 8. Normalized on Resistance vs. Junction Temperature

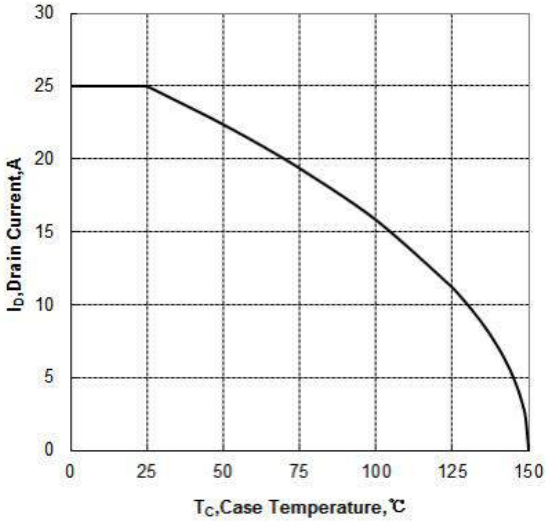


Figure 9: Maximum Continuous Drain Current vs. Case Temperature

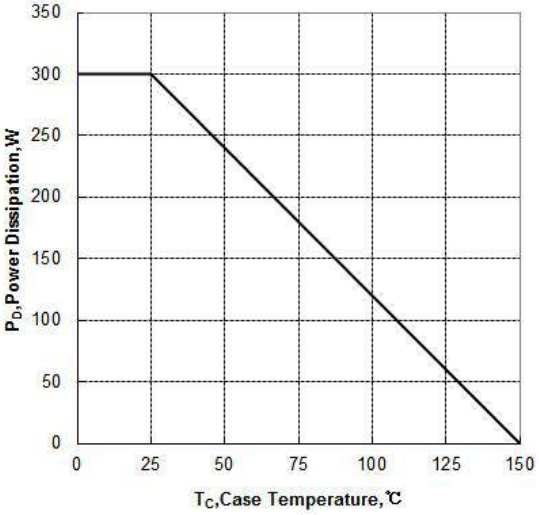


Figure 10: Maximum Power Dissipation vs Case Temperature

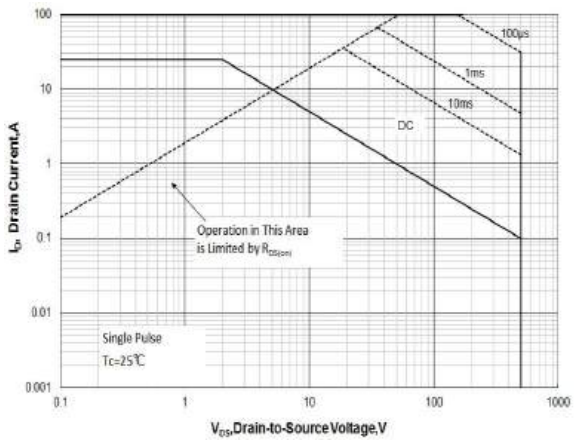


Figure 11. Maximum Safe Operating Area

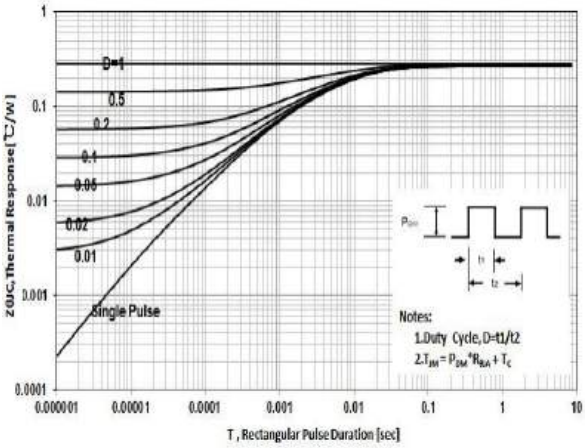
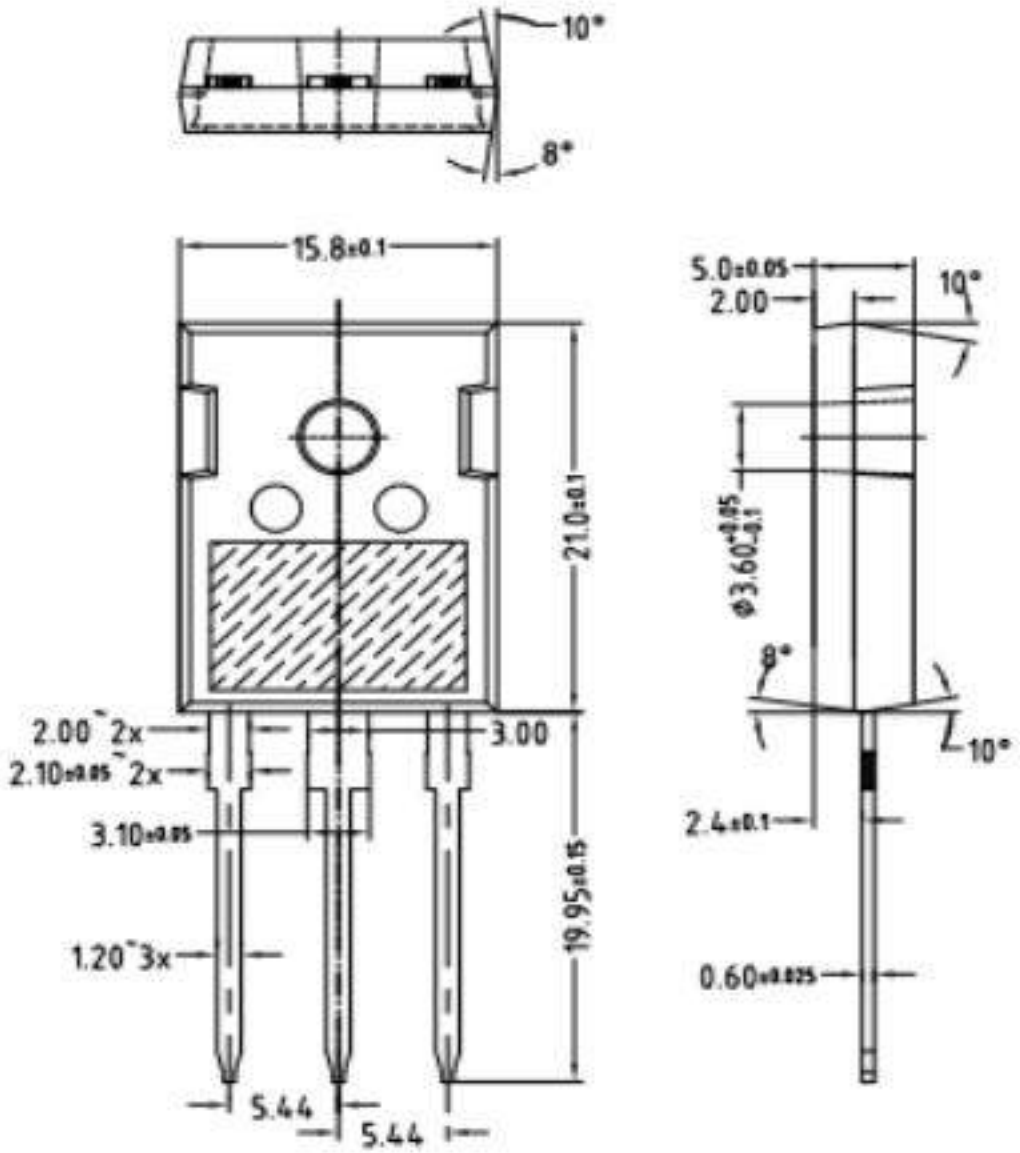


Figure 12: Normalized Maximum Transient Thermal Impedance

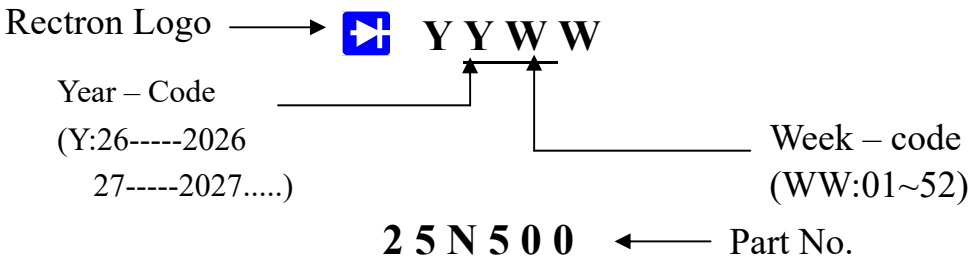
Package information

TO-247-3L



RECTRON

Marking on the body



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