Description

N-channel Enhancement Mode Power MOSFET

Features

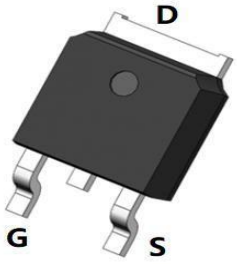
- 100V,15A
  $R_{DS(ON)}$<108mΩ@V_{GS}=10V
  $R_{DS(ON)}$<125mΩ@V_{GS}=4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$and Low GateCharge

Applications

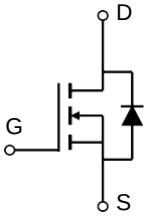
- Load Switch
- PWM Application
- Power Management

100%UISTESTED!
100%ΔVdsTESTED!

RoHS



TO-252-3L



Schematic Diagram

Package Marking and Ordering Information

DeviceMarking	Device	Outline	Package	ReelSize	Reel(pcs)	PerCarton (pcs)
OCT10N10K	OCT10N10K	TAPING	TO-252-3L	13"	2500	25000

Absolute Maximum Ratings(@T_C=25°Cunlessotherwisespecified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		100	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25°C	15	A
		T_C=100°C	9	
I_{DM}	Pulsed Drain Current[1]		60	A
E_{AS}	Single Pulsed Avalanche Energy[2]		6	mJ
P_D	Power Dissipation	T_C=25°C	44	W
$R_{\theta JC}$	Thermal Resistance ,Junction to Case		3	°C/W
T_J,T_{STG}	Junction & Storage Temperature Range		-55 to150	°C

Electrical Characteristics(T_J=25°Cunlessotherwisespecified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D=250μA,V_{GS}=0V	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,V_{GS}=0V	-	-	1.0	μ A
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.5	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS}=10V,I_D=5A	-	86.0	108.0	mΩ
		V_{GS}=4.5V,I_D=3A	-	96.0	125.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=25V, f=1MHz	-	847	-	pF
C_{oss}	Output Capacitance		-	40	-	pF
C_{rss}	Reverse Transfer Capacitance		-	12	-	pF
Q_g	Total Gate Charge	V_{GS}=0to10V V_{DS}=50V,I_D=2A	-	20	-	nC
Q_{gs}	Gate Source Charge		-	2.8	-	nC
Q_{gd}	Gate Drain("Miller")Charge		-	4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V,V_{DD}=50V I_D=3A,RGEN=1.8Ω	-	6	-	ns
t_r	Turn-On Rise Time		-	7	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	21	-	ns
t_f	Turn-Off Fall Time		-	3	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	15	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	60	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V,I_S=10A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=10A,di/dt=100A/us	-	22	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	29	-	nC

Notes: 1.RepetitiveRating:Pulse Width Limited by Maximum Junction Temperature.

2. EAS condition :TJ=25℃,VDD=50V,VG=10V,L=0.5mH,Rg=25Ω,IAS=5A

3. PulseTest:PulseWidth≤300μs,DutyCycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

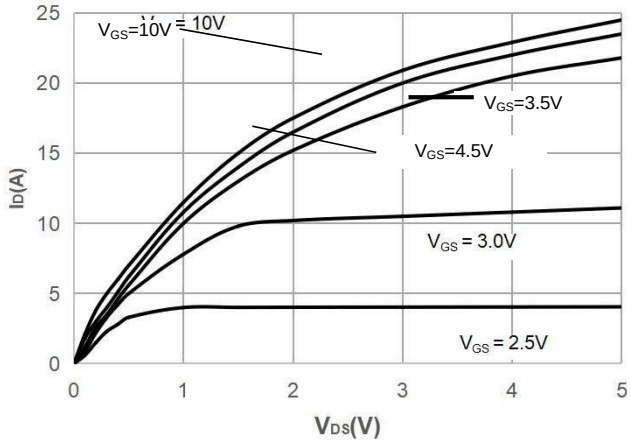


Figure 2: Typical Transfer Characteristics

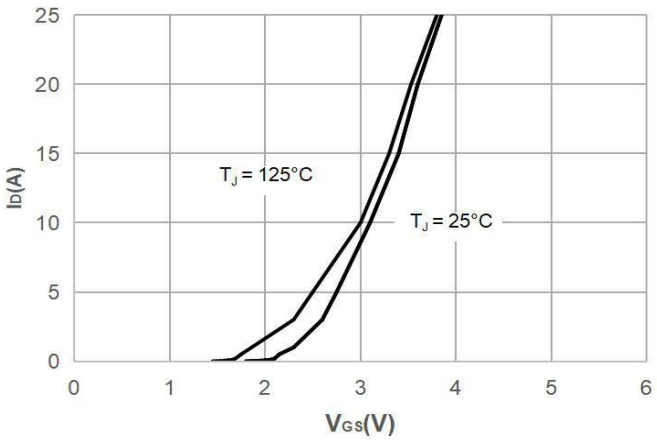


Figure 3: On-resistance vs. Drain Current

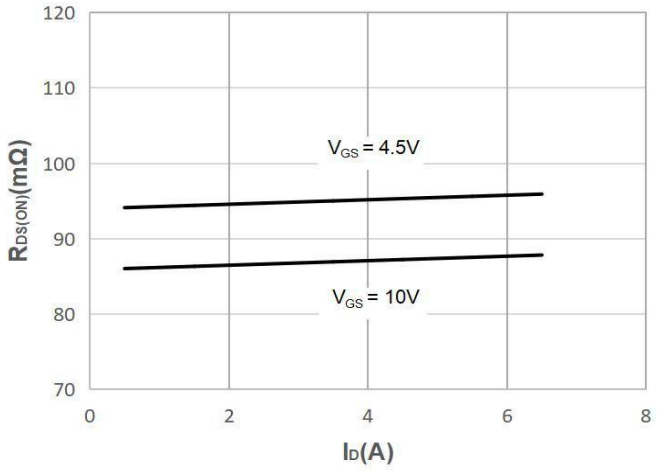


Figure 4: Body Diode Characteristics

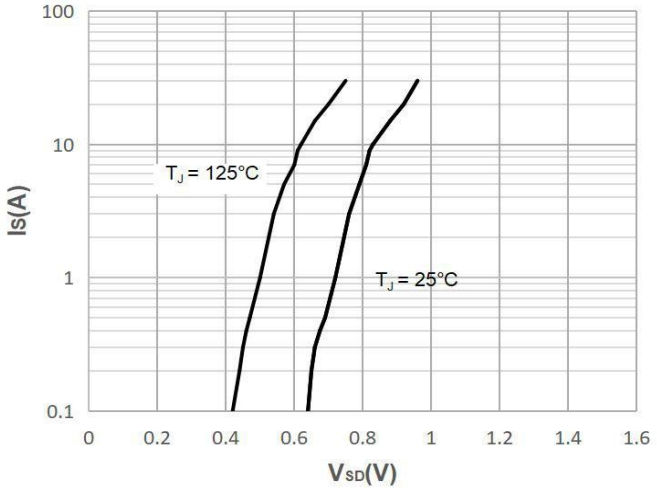


Figure 5: Gate Charge Characteristics

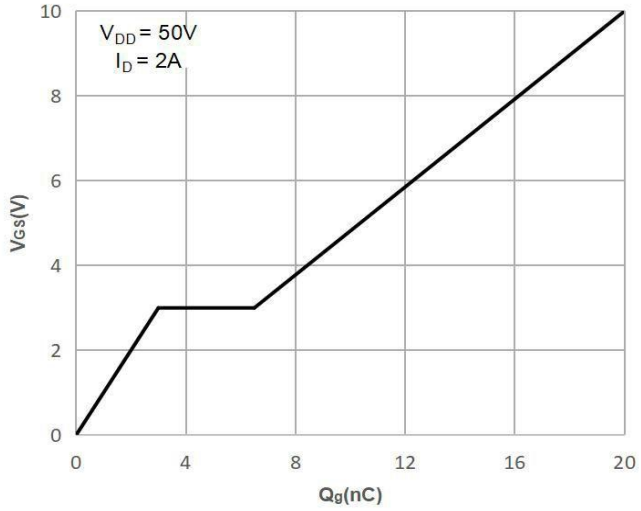
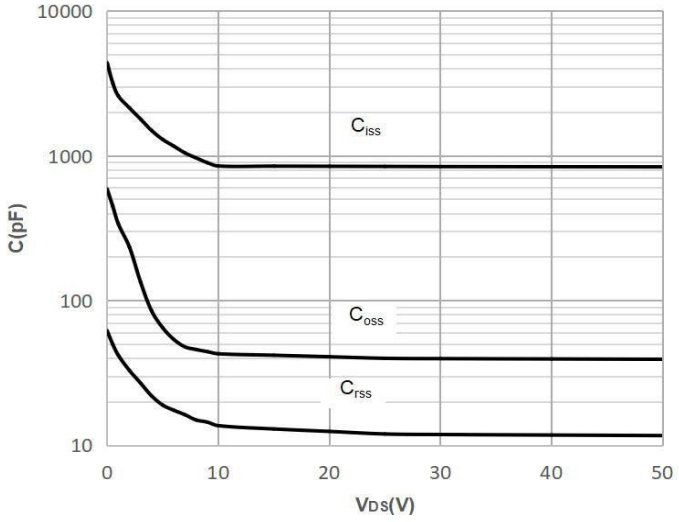


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

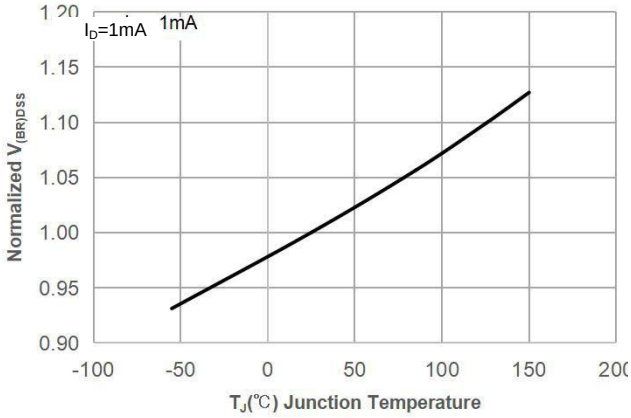


Figure 8: Normalized on Resistance vs. Junction Temperature

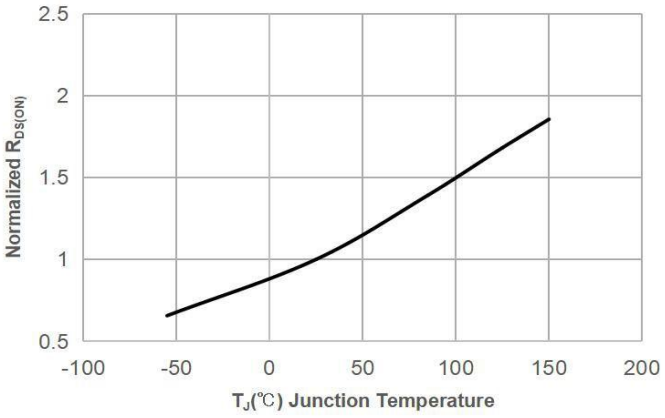


Figure 9: Maximum Safe Operating Area

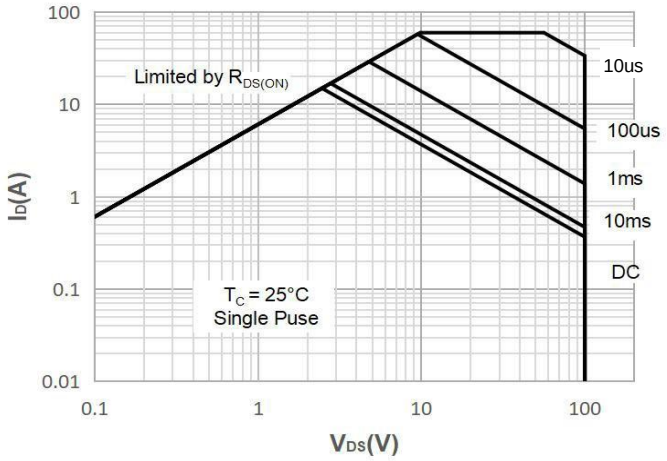


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

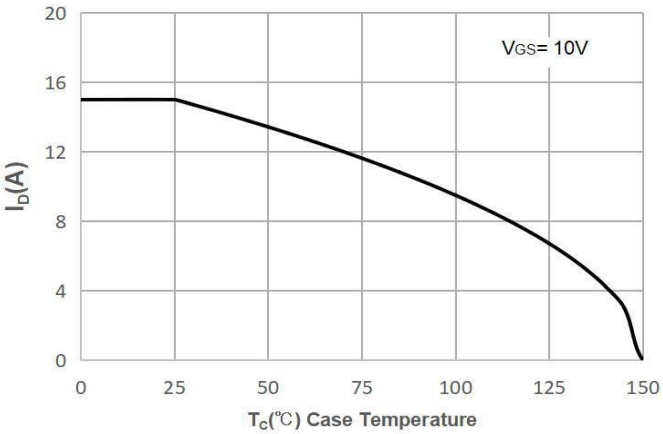


Figure 11: Normalized Maximum Transient Thermal Impedance

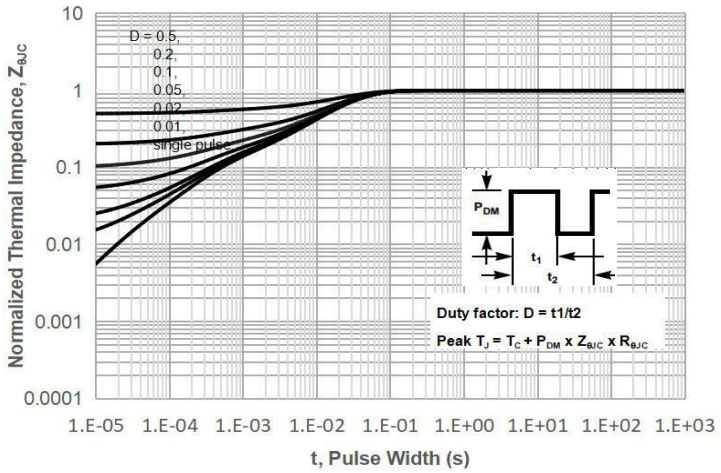
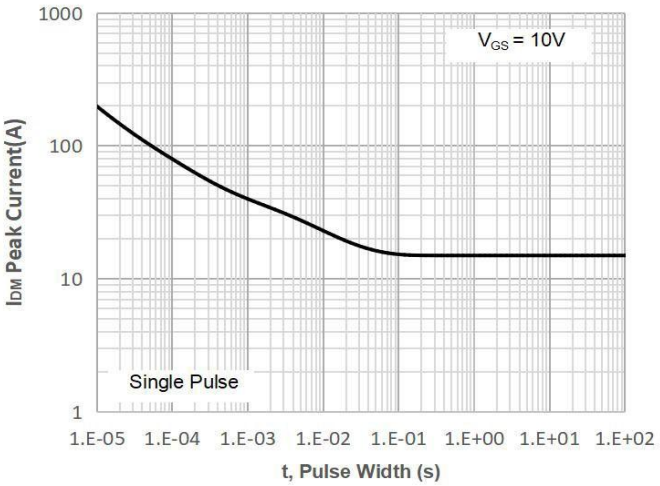


Figure 12: Peak Current Capacity



Test Circuit

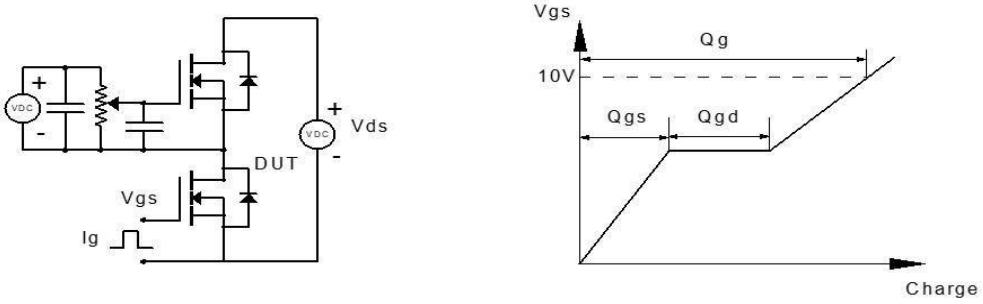


Figure1:GateChargeTestCircuit&Waveform

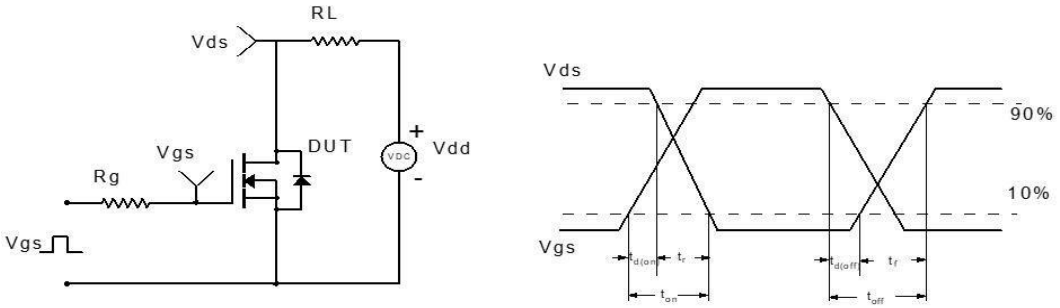


Figure2:ResistiveSwitchingTestCircuit&Waveform

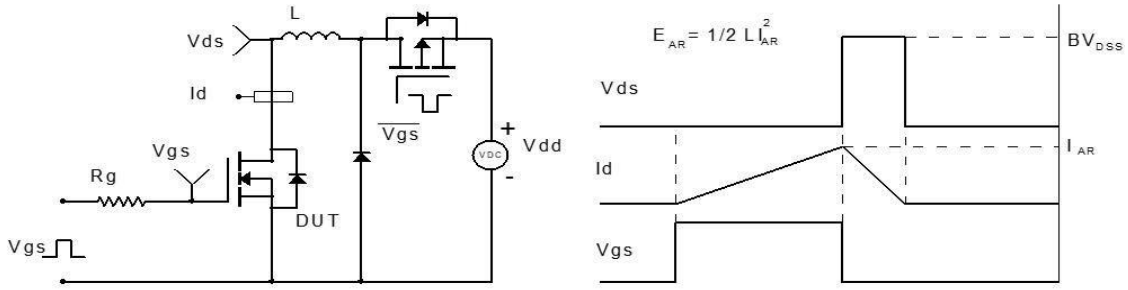


Figure3:UnclampedInductiveSwitchingTestCircuit&Waveform

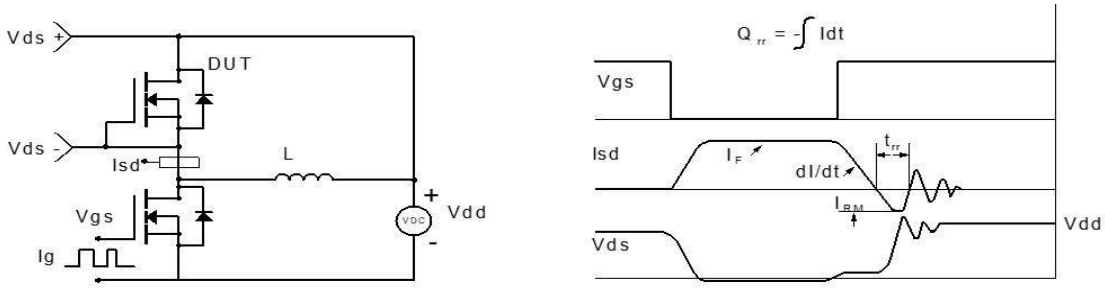
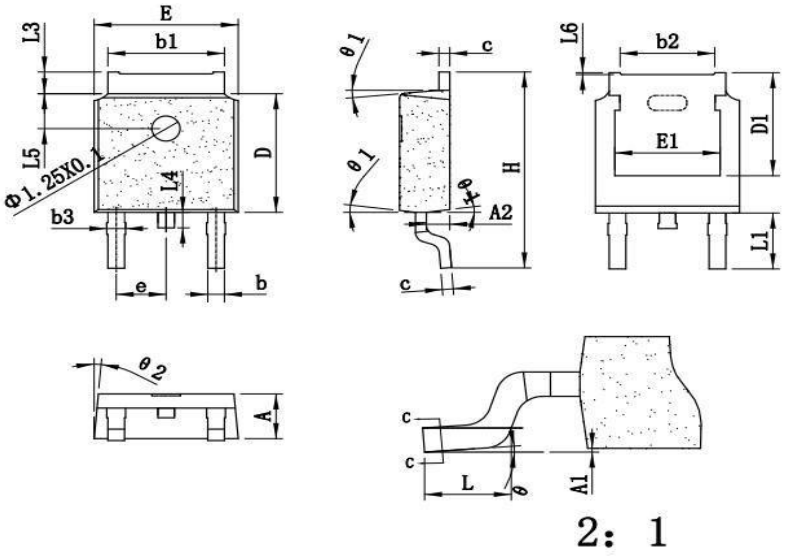


Figure4:DiodeRecoveryTestCircuit&Waveform

Package Mechanical Data(TO-252-3L)



SYMBOL	mm		
	MIN	NOM	MAX
*A	2.20	2.30	2.38
*A1	0.00	—	0.15
*A2	0.90	1.00	1.10
*b	0.72	0.78	0.85
b1	5.23	5.33	5.46
b2	4.05	4.20	4.35
*b3	0.78	0.85	0.90
*c	0.47	0.52	0.55
*D	6.00	6.10	6.20
D1	5.40REF		
*E	6.50	6.60	6.70
E1	4.70	4.83	4.92
*e	2.286BSC		
*H	9.90	10.10	10.20
*L	1.40	1.55	1.70
L1	2.90REF		
L3	0.90	—	1.20
L4	0.75	0.85	0.95
L5	1.70	1.80	1.90
L6	0.00	0.06	0.12
*θ	0°	—	5°
θ1	5°	7°	9°
θ2	5°	7°	9°