Description

This 10A,150V N-Channel MOSFET in a TO-252 Plastic Package.

Applications

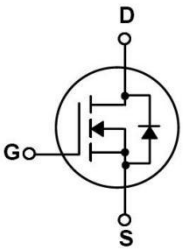
Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

Features

- Low RDS(on)
- Low gate charge
- Low Crss
- Fast switching
- Halogen-free Product

V_{DSS}	$R_{DS(ON)}$ Typ	I_D
150V	182mΩ	10A

Equivalent Circuit & Pinning



PIN1：Gate PIN 2：Drain PIN 3：Source PIN 4：Drain

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	10	A
Pulsed Drain Current C		I_{DM}	25	
Avalanche Current C		I_{AS}	10.8	A
Avalanche energy L=0.1 mH C		E_{AS}	7	mJ
Power Dissipation B	T_C=25°C	P_D	54	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Maximum Junction-to-Ambient A	t ≤ 10s	$R_{\theta JA}$	44	℃/W
Maximum Junction-to-Ambient AD	Steady-State		110	℃/W
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	2.8	℃/W

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	150	155		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=150V, V_{GS}=0V			1	μA
		T_J=125°C			5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}，I_D=250μA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=7A		182	300	mΩ
		V_{GS}=4.5V, I_D=6A		183	450	
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V			1	V

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		660		pF
Output Capacitance	C_{oss}			74		
Reverse Transfer Capacitance	C_{rss}			17		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		2.6		Ω
Turn-On Delay Time	t_D(on)	V_{GS}=10V, V_{DS}=75V, I_D=5A, R_L=14.7Ω, R_{GEN}=50Ω			60	ns
Turn-On Rise Time	t_r				250	
Turn-Off Delay Time	t_D(off)				135	
Turn-Off Fall Time	t_f				135	
Body Diode Reverse Recovery Time	t_{rr}	ISD=4A, dI/dt=100A/ms		200		ns

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°C. The
Power dissipation PDSM is based on R qJA and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.
B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

Electrical Characteristic Curve

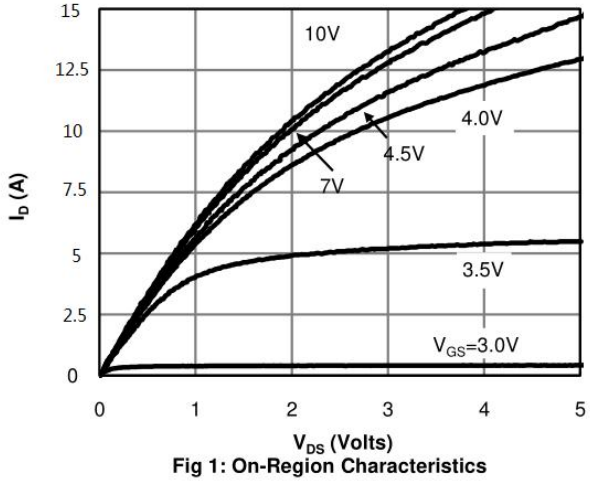


Fig 1: On-Region Characteristics

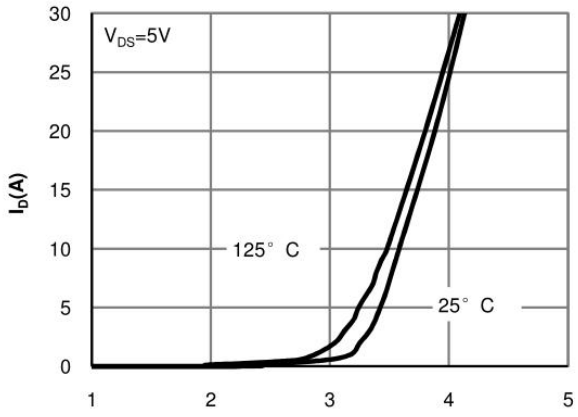


Figure 2: Transfer Characteristics

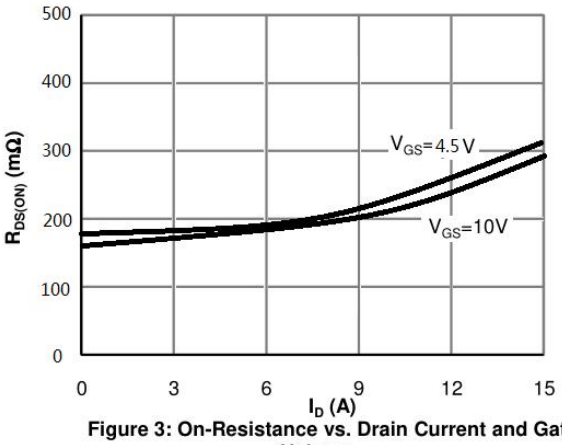


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

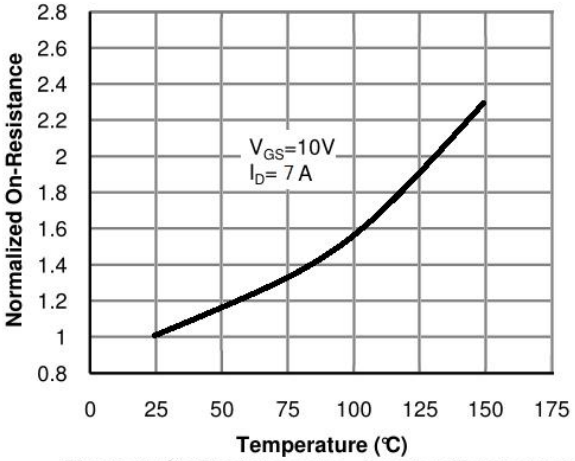


Figure 4: On-Resistance vs. Junction Temperature

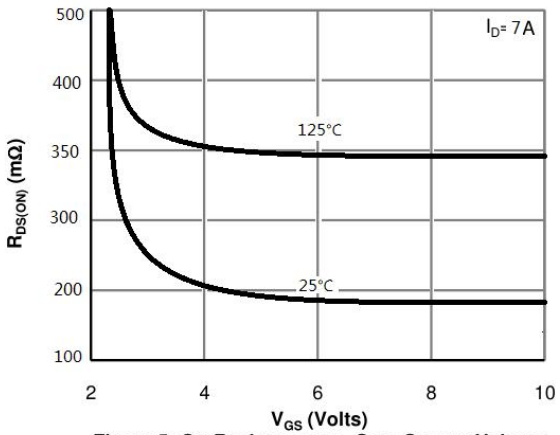


Figure 5: On-Resistance vs. Gate-Source Voltage

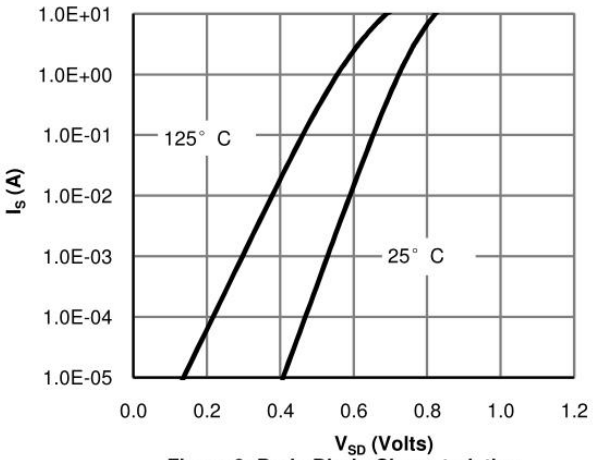


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

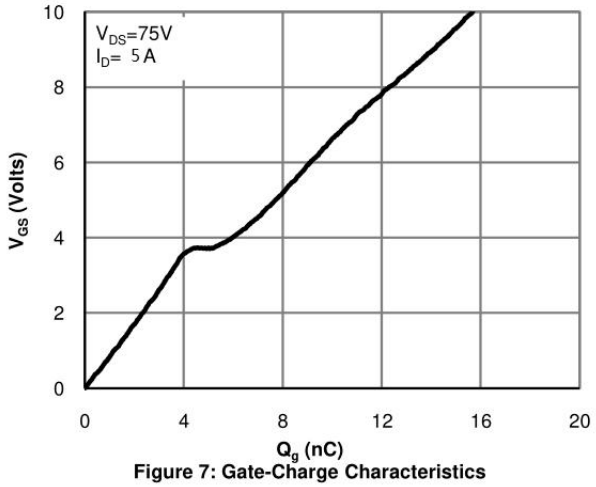


Figure 7: Gate-Charge Characteristics

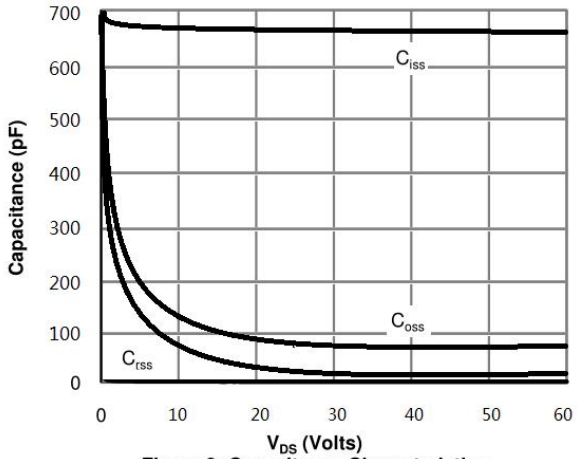


Figure 8: Capacitance Characteristics

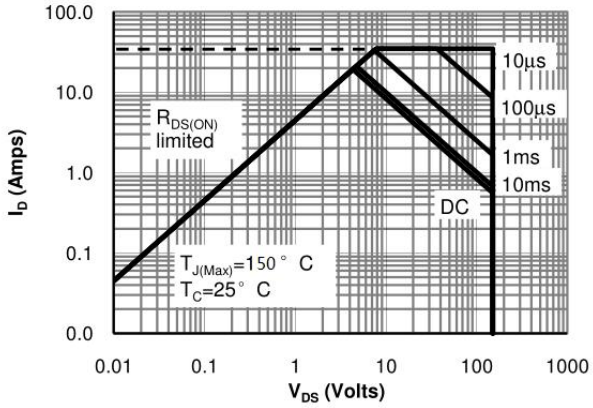


Figure 9: Maximum Forward Biased Safe Operating Area

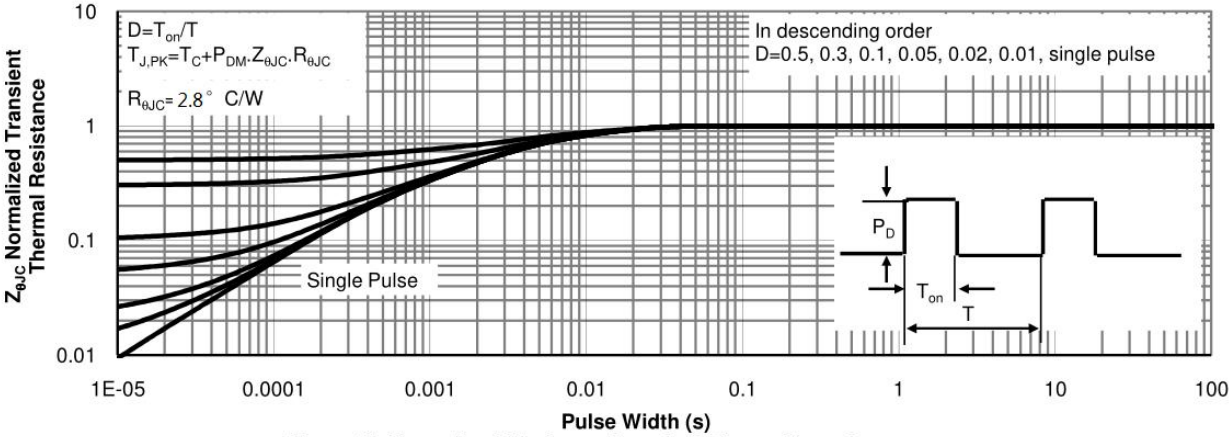
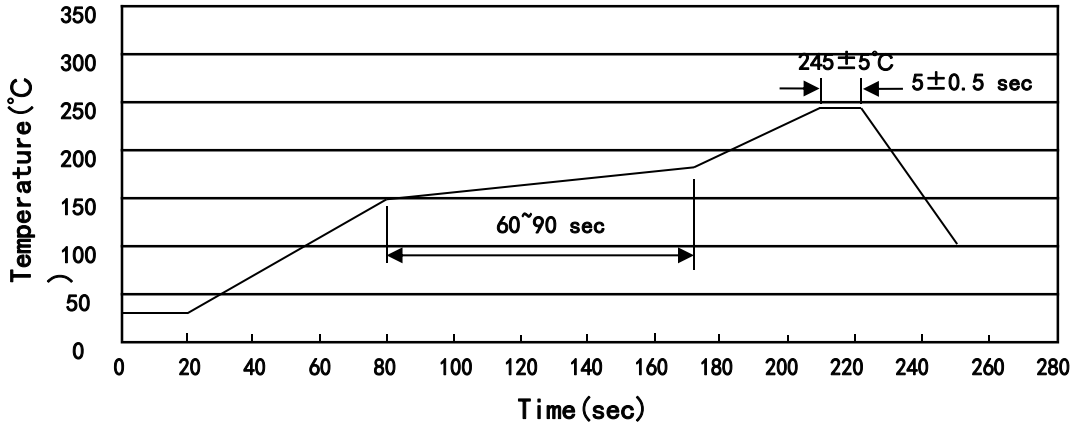


Figure 10: Normalized Maximum Transient Thermal Impedance

Temperature Profile for IR Reflow Soldering(Pb-Free)



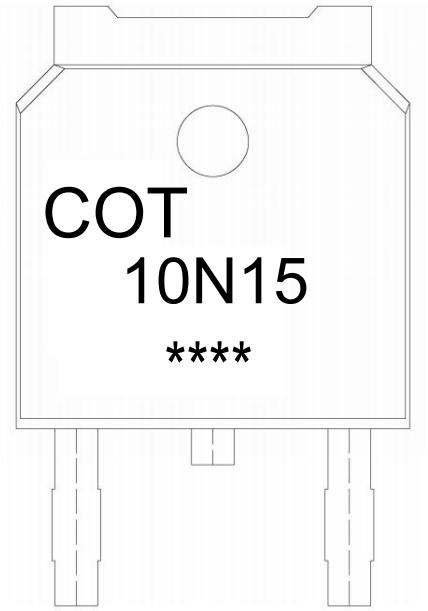
Note:

1. Preheating:150~180℃, Time:60~90sec.
2. Peak Temp.:245±5℃, Duration:5±0.5sec.
3. Cooling Speed: 2~10℃/sec.

Resistance to Soldering Heat Test Conditions

Temp.:260±5℃ Time:10±1 sec

Marking Instructions



Note:

COT: Company Code.

10N15: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

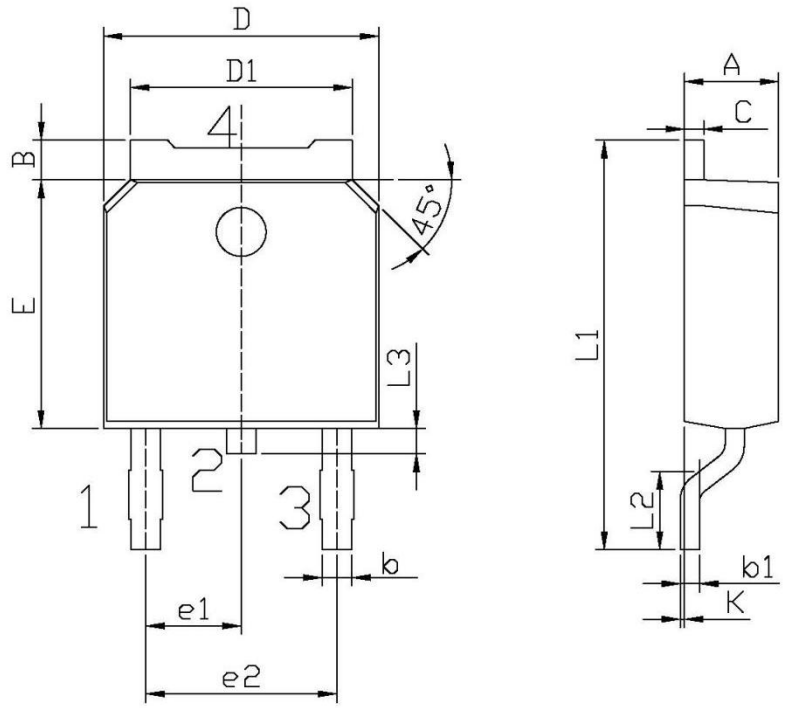
REEL INFORMATION

Package Type	Units					Dimension (unit: mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

TUBE INFORMATION

Package Type	Units					Dimension (unit: mm³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

Package Outline Dimensions



单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252