

Descriptions

This 40V 150A, N-CHANNEL MOSFET in a TO-252 Plastic Package.

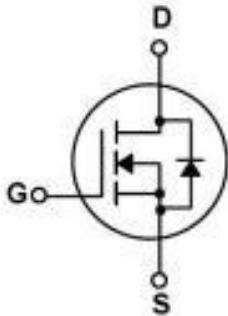
Features

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

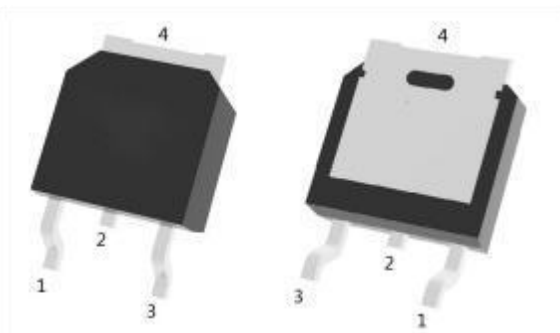
Applications

- Suited for low voltage applications such as automotive.
- DC/DC Converters.
- High efficiency switching for power management in portable and battery operated products.
- Meet the stringent requirements of automotive applications.

Equivalent Circuit



Pinning



PIN1: G PIN 2: D PIN 3: S PIN 4 : D

Marking

See Marking Instructions

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DSS}	40	V
Drain Current	I _D (T _C =25°C)	150	A
Drain Current - Pulsed	I _{DM}	304	A
Gate-Source Voltage	V _{GS}	±20	V
Avalanche Current	I _{AS}	33	A
Single Pulsed Avalanche Energy(L=0.5mH)	E _{AS}	435	mJ
Power Dissipation	P _D (T _C =25°C)	120	W
Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C
Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
	Steady-State	50	
Thermal Resistance-Junction to Case	Steady-State	1.04	

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V V _{GS} =0V			1.0	μA
Gate-Body Leakage Current Forward	I _{GSS}	V _{GS} =±20V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250μA	1.0	1.7	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V I _D =20A		2.5	3.0	mΩ
		V _{GS} =4.5V I _D =10A		3.1	5.0	
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =1A			1.4	V
Gate resistance	R _g	V _{GS} =0V V _{DS} =0V, f=1MHz		1.16		Ω
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHz		9600		pF
Output Capacitance	C _{oss}			740		
Reverse Transfer Capacitance	C _{rss}			650		
Total Gate Charge	Q _{g(10V)}	V _{GS} =10V, I _D =20A, V _{DS} =20V,		51		nC
Total Gate Charge	Q _{g(4.5V)}			23		
Gate Source Charge	Q _{gs}			13.2		
Gate Drain Charge	Q _{gd}			3.1		

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=1\ \Omega$ $R_{GEN}=3\ \Omega$		11		ns
Turn-On Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(off)}$			40		
Turn-Off Fall Time	t_f			10		

Electrical Characteristic Curve

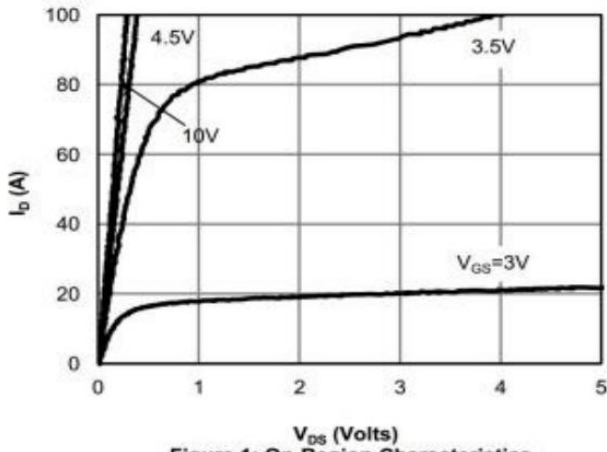


Figure 1: On-Region Characteristics

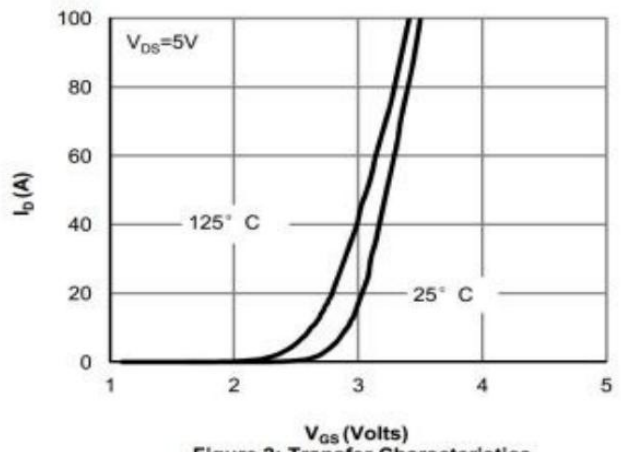


Figure 2: Transfer Characteristics

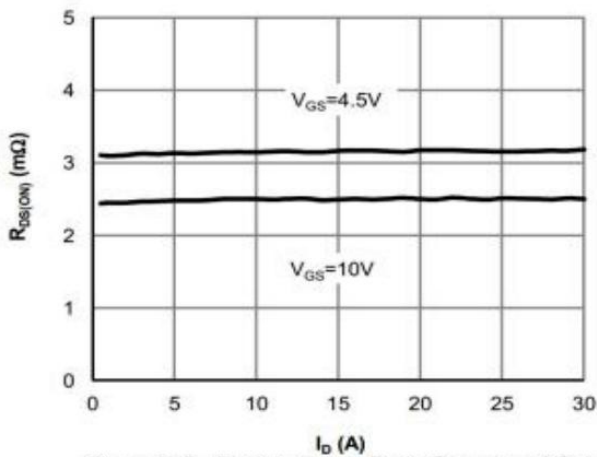


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

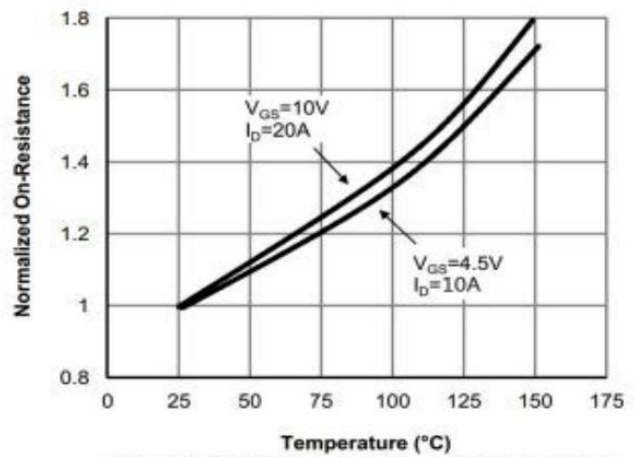


Figure 4: On-Resistance vs. Junction Temperature

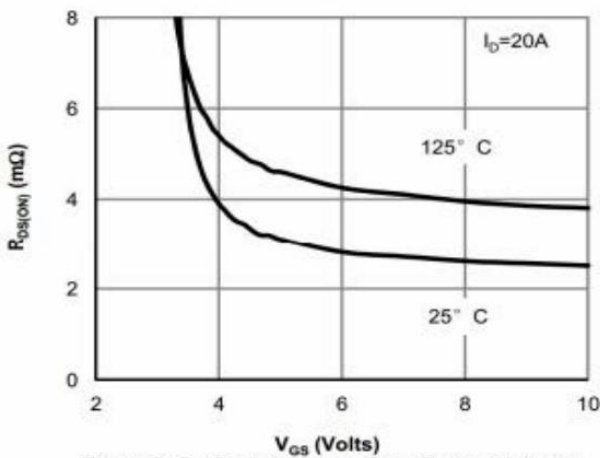


Figure 5: On-Resistance vs. Gate-Source Voltage

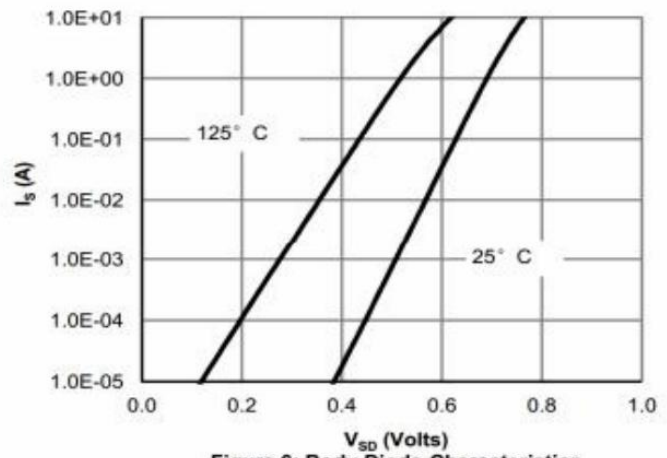


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

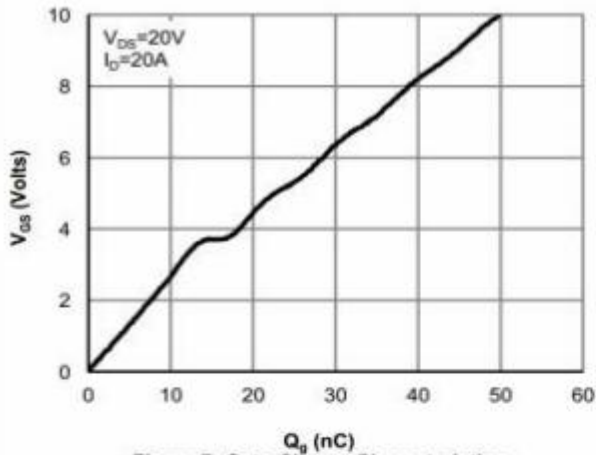


Figure 7: Gate-Charge Characteristics

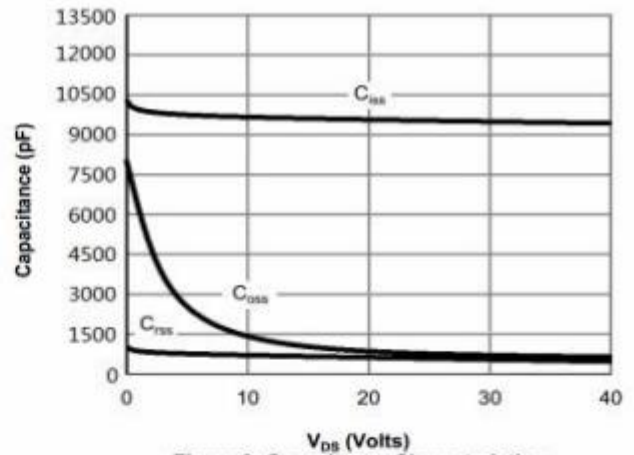


Figure 8: Capacitance Characteristics

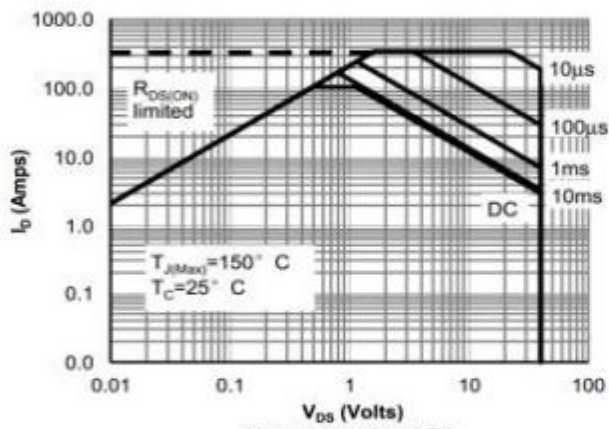


Figure 9: Maximum Forward Biased Safe Operating Area

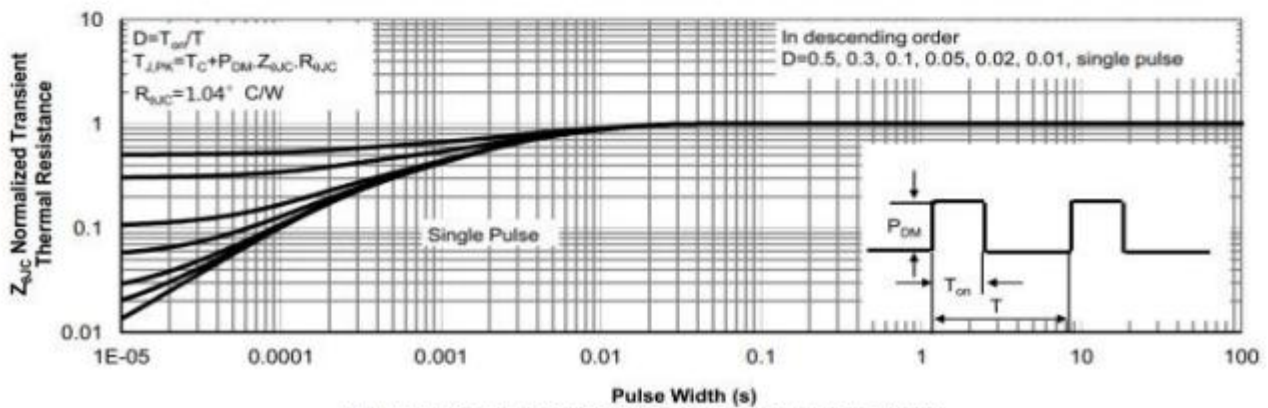
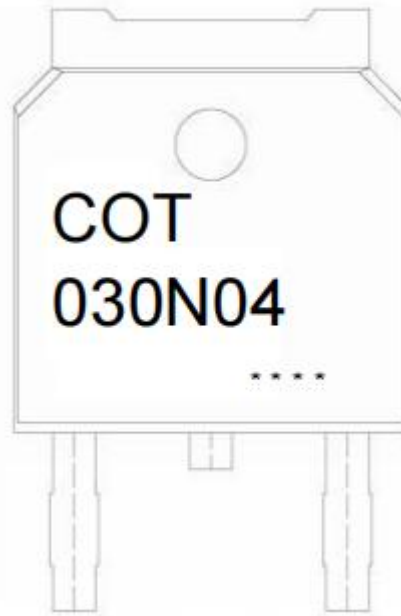


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



- Note:
- COT: Company Logo
 - 030N04: Product Type.
 - ****: Lot No. Code, code change with Lot No.

Packaging SPEC

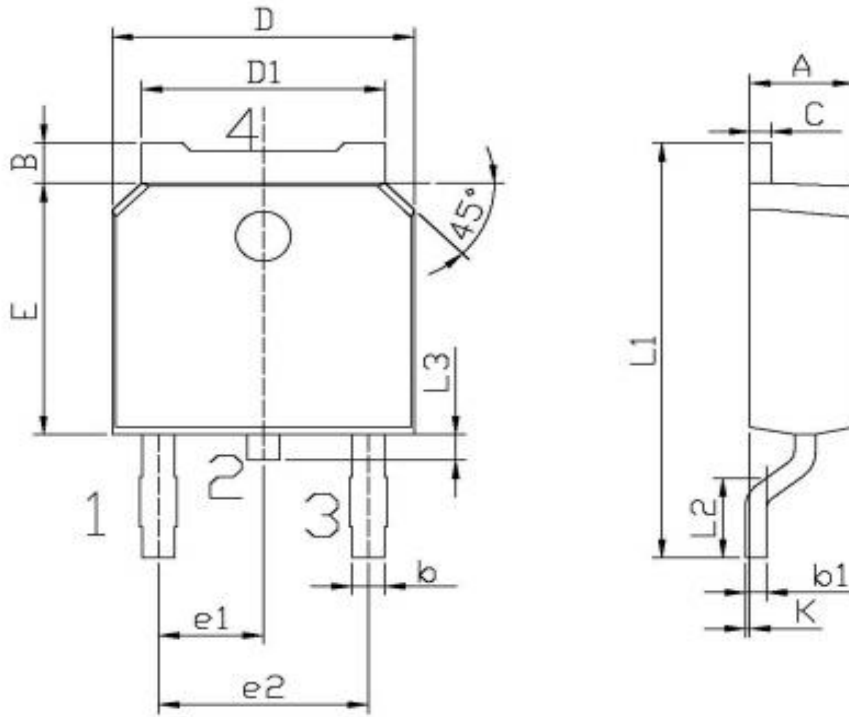
REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	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: mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-251/252	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