Description

This 40V,120A N-Channel MOSFET in a TO-263 Plastic Package.

Features

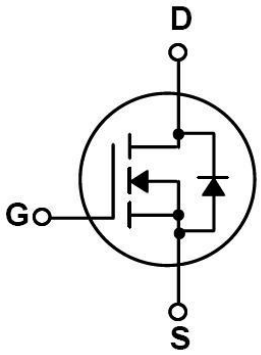
- Ultra Low On-Resistance
- Fast switching
- Halogen-free Product.

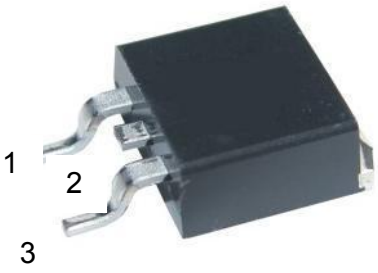
Applications

- These devices are well suited for high efficient
- Switched mode power supplies
- Active power factor correction
- Electronic lamp ballast based on half bridge topology.

V_{DSS}	$R_{DS(on)}$ (Typ)	I_D
40V	1.6mΩ	120A

Equivalent Circuit & Pinning





Pin1:Gate Pin2:Drain Pin3:Source

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	40	V
Drain Current		I_D(Tc=25℃)	120	A
Pulsed Drain Current		I_{DM}	480	A
Gate-Source Voltage		V_{GS}	±20	V
Single Pulsed Avalanche Energy L=0.5mH		E_{AS}	482	mJ
Avalanche Current		I_{AS}	35	A
Total Power Dissipation		P_D(Tc=25℃)	187	W
Junction and Storage Temperature Range		T_J,T_{STG}	-55 to 175	℃
Thermal Resistance-Junction to Ambient	t ≤ 10s	$R_{\theta JA}$	15	℃/W
	Steady-State		60	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	0.7	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	40	44		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V V_{GS}=0V			1	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	1.6	3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=20A		1.6	2	mΩ
		V_{GS}=4.5V I_D=10A		2.1	4	
Forward On Voltage	V_{SD}	V_{GS}=0V I_S=1A			1.2	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz		11000		pF
Output Capacitance	C_{oss}			840		
Reverse Transfer Capacitance	C_{rss}			650		

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate resistance	R_g	f=1MHz		1.45		Ω
Total Gate Charge	Q_g(10V)	V_{GS}=10V V_{DS}=20V I_D=20A		68		nC
Total Gate Charge	Q_g(4.5V)			28		
Gate Source Charge	Q_{gs}			16.5		
Gate Drain Charge	Q_{gd}			4.5		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=20V R_L=1Ω R_{GEN}=3Ω		12.5		ns
Turn-On Rise Time	t_r			9.5		
Turn-Off Delay Time	$t_{d(off)}$			57.5		
Turn-Off Fall Time	t_f			10.5		

Electrical Characteristic Curve

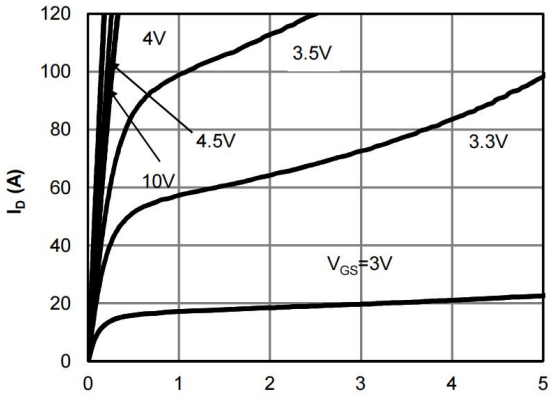


Figure 1: On-Region Characteristics

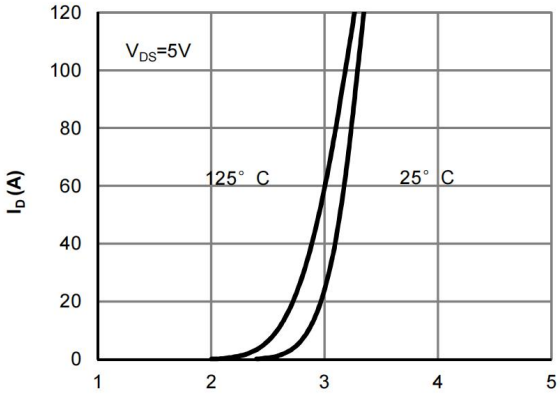


Figure 2: Transfer Characteristics

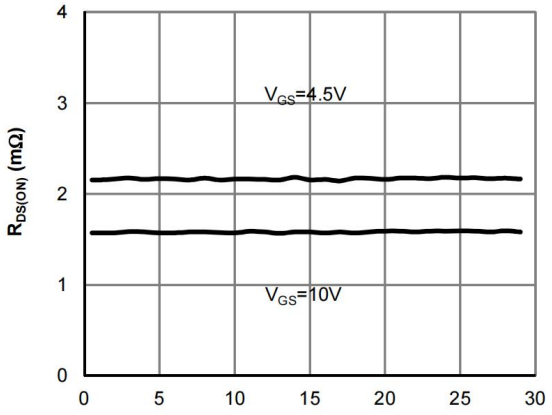


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

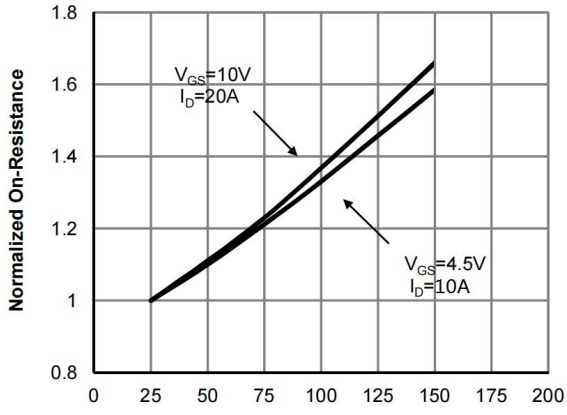


Figure 4: On-Resistance vs. Junction Temperature

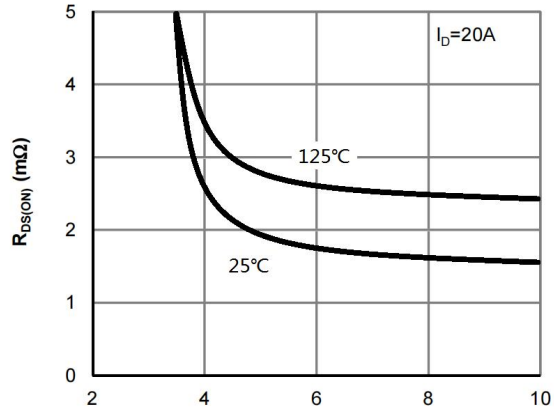


Figure 5: On-Resistance vs. Gate-Source Voltage

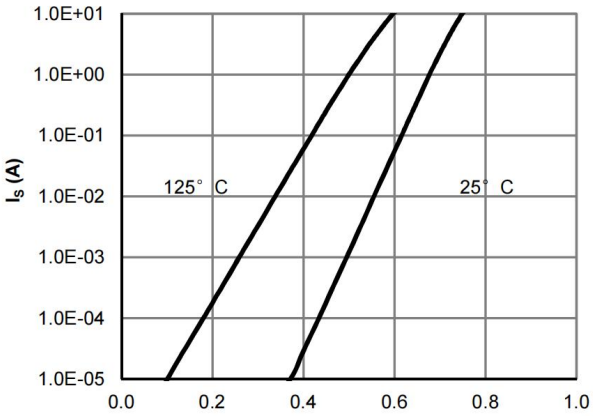


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

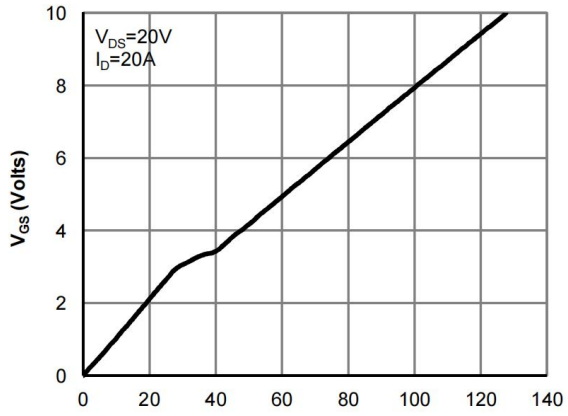


Figure 7: Gate-Charge Characteristics

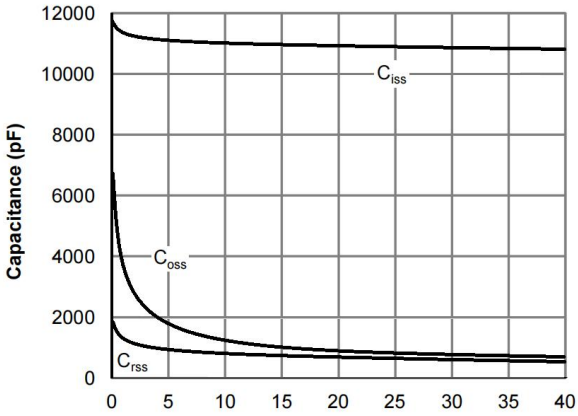


Figure 8: Capacitance Characteristics

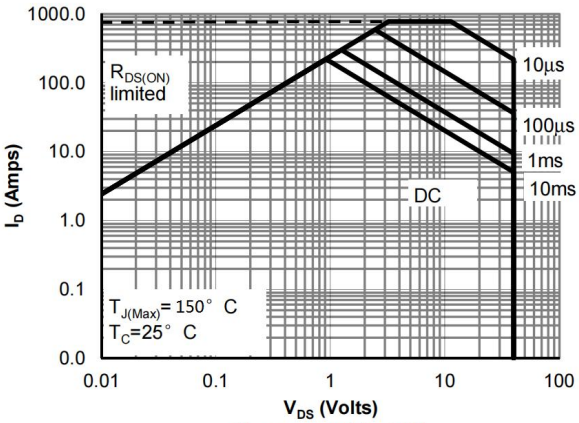


Figure 9: Maximum Forward Biased Safe Operating Area

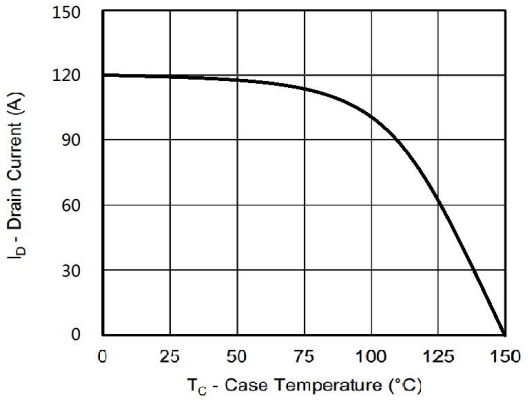


Figure10. Maximum Continuous Drain Current vs Case Temperature

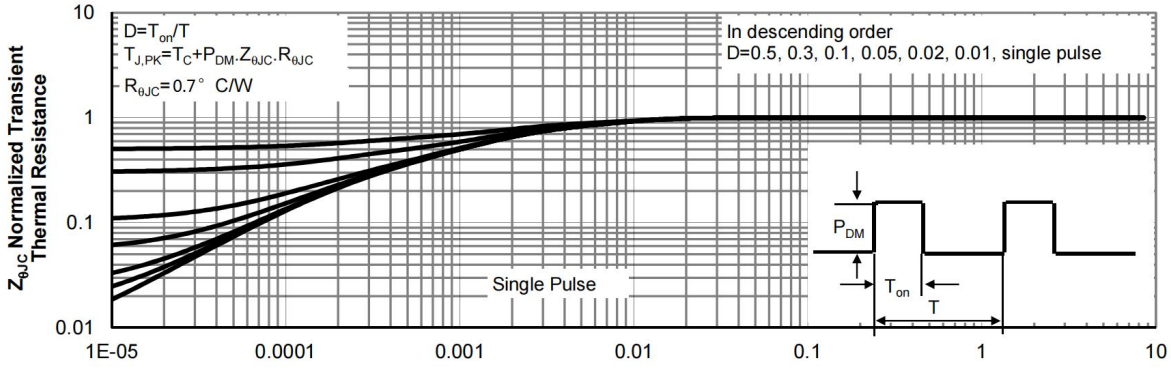
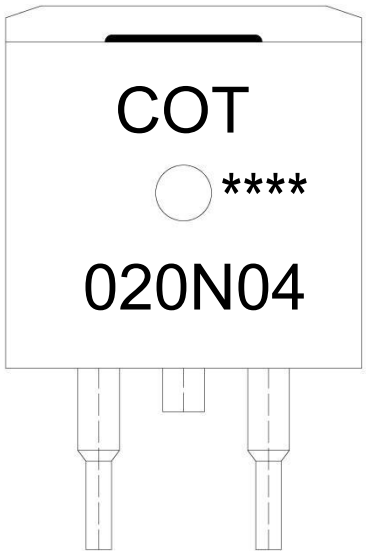


Figure 11: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT:	Company Code
020N04:	Product Type.
****:	Lot No. Code, code change with Lot No.

Packaging SPEC.

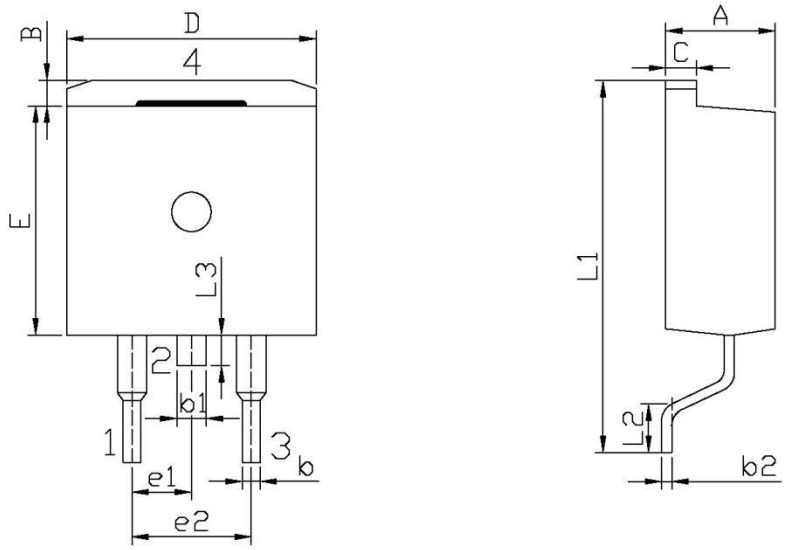
REEL INFORMATION

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-263	800	1	800	5	4,000	13″ ×24	360×360×50	385×257×392

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-263	50	20	1,000	5	5,000	532×33×7.0	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	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

TO-263