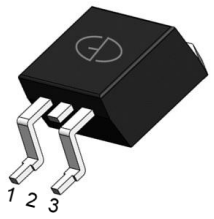
N-Channel 40V (D-S) Power MOSFET

Features

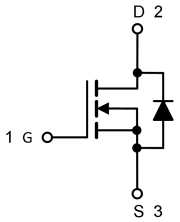
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



TO-263AB (D^2PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	40	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V*(Note 1)*	T_C=25°C	I_D	170	A
Drain Current, Pulsed *(Note 2)*		I_{DM}	680	A
Single Avalanche Energy @ L=0.5mH		E_{AS}	719	mJ
Power Dissipation*(Note 3)*	T_C=25°C	P_D	208	W
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Calculated continuous current based on maximum allowable junction temperature.
Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case*(Note 3)*	R_{thJC}	0.72	°C/W

Note 3: The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	2	--	4	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=40A	--	2.1	2.4	mΩ
Total Gate Charge	Q_g	I_D = 20A, V_{DS}=20V, V_{GS} = 10V	--	138	--	nC
Gate Source Charge	Q_{gs}		--	25	--	
Gate Drain Charge	Q_{gd}		--	36	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=20V, R_{GEN}=3.6Ω, R_L=1Ω	--	32	--	ns
Turn-on Rise Time	t_r		--	33	--	
Turn-off Delay Time	$t_{d(off)}$		--	70	--	
Turn-off Fall Time	t_f		--	24	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=40V, f=1MHz	--	10973	--	pF
Output Capacitance	C_{oss}		--	650	--	
Reverse Transfer Capacitance	C_{rss}		--	536	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current (Body Diode)	I_S	T_C=25°C	--	--	170	A
Pulsed Source Current (Body Diode)	I_{SM}		--	--	680	
Diode Forward Voltage	V_{SD}	I_S=40A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	I_F =20A, di/dt = 100 A/μs	--	50	--	ns
Reverse Recovery Charge	Q_{rr}		--	75	--	nC

Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

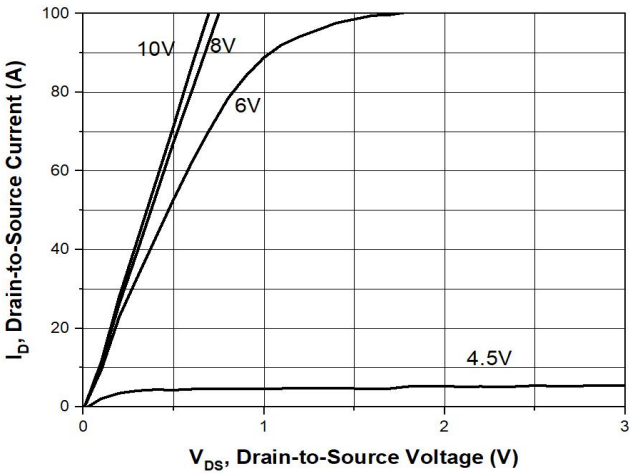


Fig.2 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

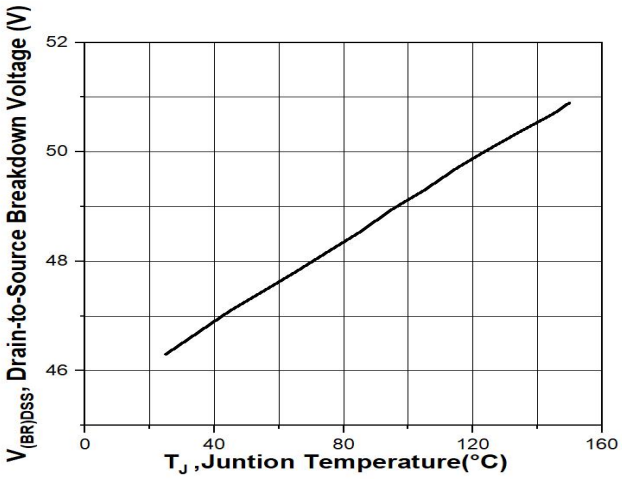


Fig.3 - RDS(on) vs. Junction Temperature

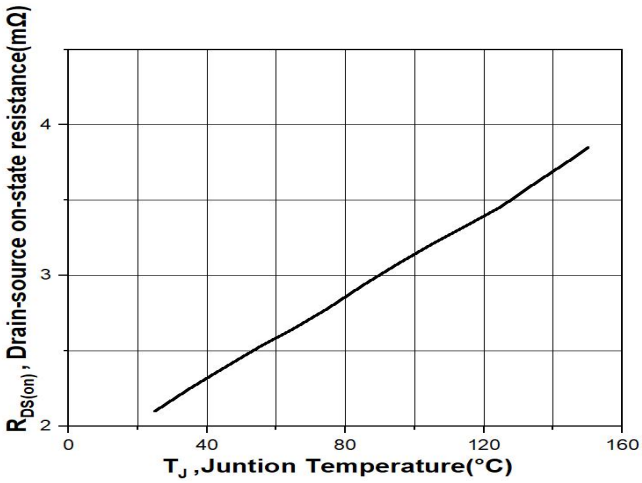


Fig.4 - Vth vs. Junction Temperature

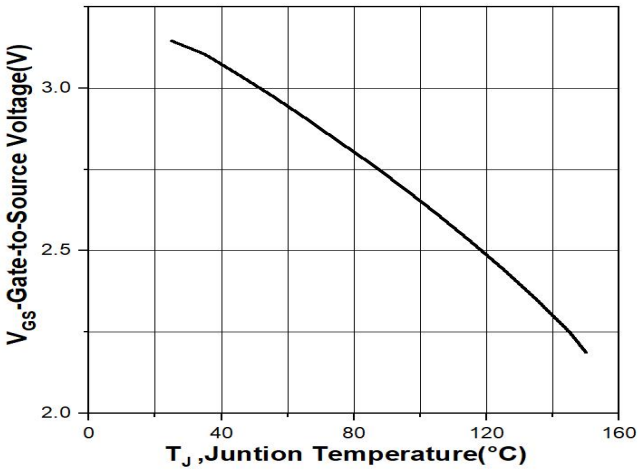


Fig.5 - Capacitance

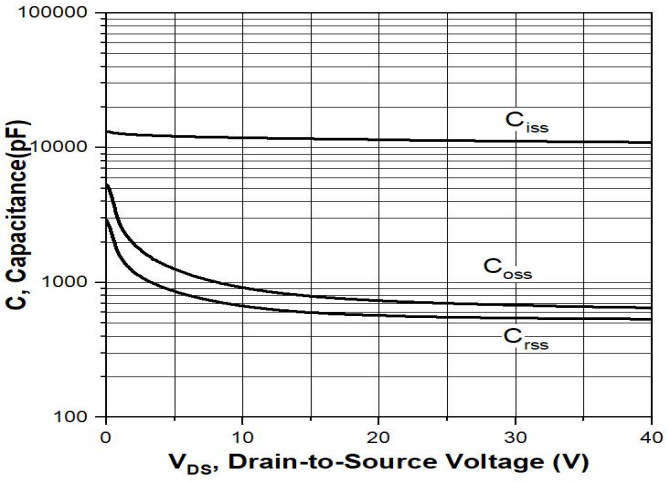
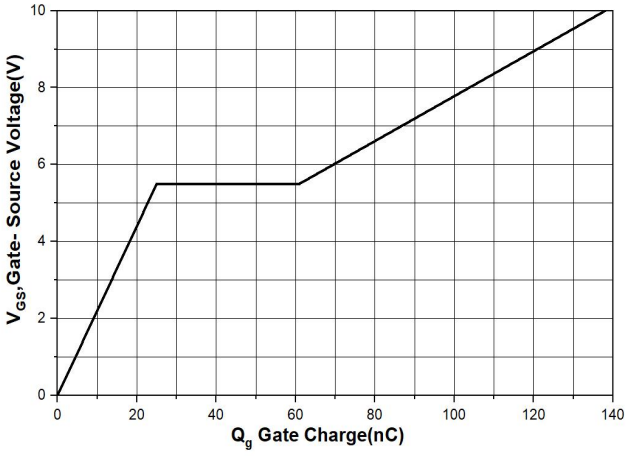


Fig.6 - Gate Charge



Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.7 - Transfer Characteristics

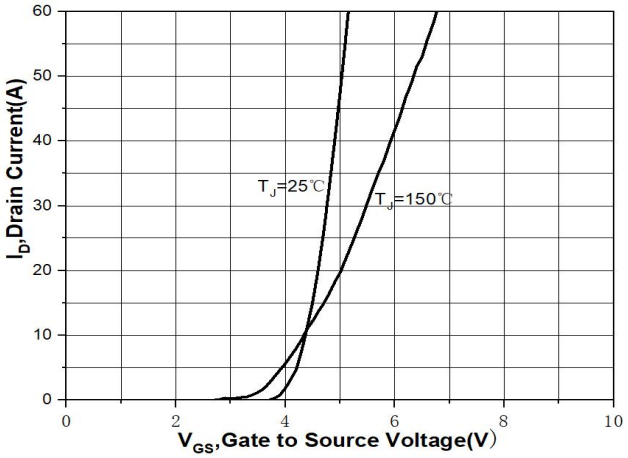
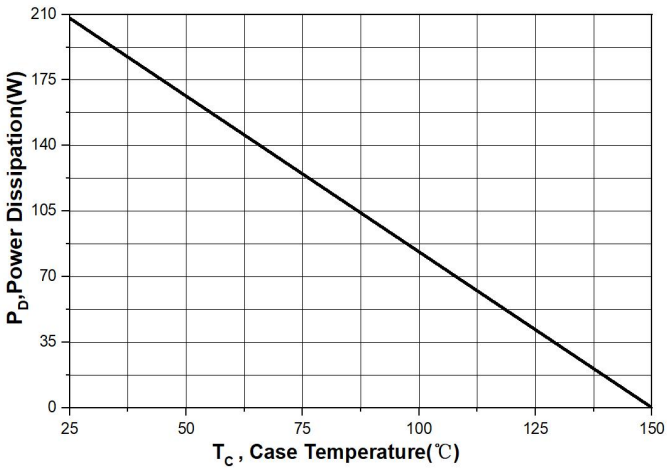
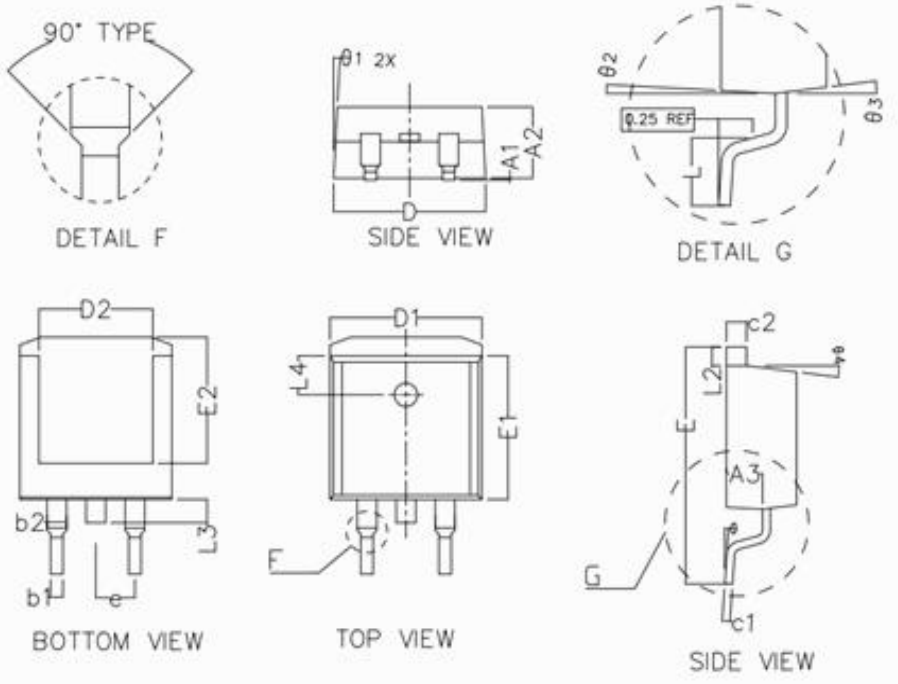


Fig.8 - Power Dissipation



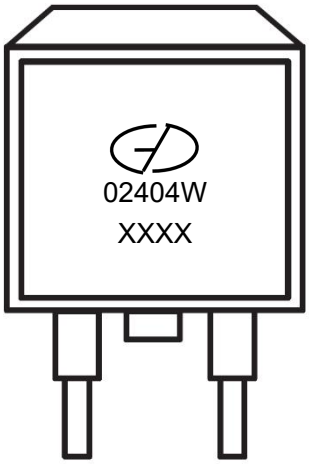
Package Outline Dimensions (Unit: millimeters)

TO-263



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.020	0.100	0.200
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	0.800	0.850
b2	1.220	1.270	1.320
c1	0.450	0.500	0.550
c2	1.250	1.300	1.350
D	9.900	10.000	10.100
▲D1	9.780	9.880	9.980
▲D2	7.900	8.000	8.100
E	14.900	15.100	15.300
▲E1	9.000	9.100	9.200
▲E2	7.600	7.700	7.800
e		2.540TYPE	
L	2.100	2.300	2.500
L2	1.100	1.200	1.300
L3	1.300	1.500	1.700
▲L4		2.50 TYPE	
θ1		3° TYPE	
θ2		3° TYPE	
θ3		7° TYPE	
θ4		7° TYPE	
θ		0 ~ 8°	

Marking Outline



Part Name: GMN02404W

1. Logo Mark:
2. P/N Mark: 02404W
3. Date Code: XXXX

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