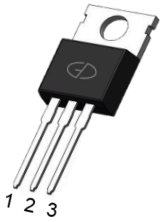
N-Channel 30V (D-S) Power MOSFET

Features

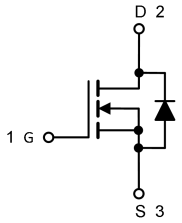
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



TO-220AB

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}	30	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V *(Note 1)*	T_C=25°C	I_D	180	A
Drain Current, Pulsed *(Note 2)*		I_{DM}	720	A
Single Avalanche Energy @ L=0.5mH		E_{AS}	324	mJ
Power Dissipation *(Note 3)*	T_C=25°C	P_D	24	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)*	$R_{\theta JC}$	1.15	°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	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	1	--	2.5	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=30A	--	1.95	2.4	mΩ
		V_{GS}=4.5V, I_D=20A	--	3.5	5	
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=30A	--	72	--	nC
Gate-Source Charge	Q_{gs}		--	11	--	
Gate-Drain Charge	Q_{gd}		--	15	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=15V, I_D=30A, R_{GEN}=3Ω	--	10.2	--	ns
Turn-on Rise Time	t_r		--	6.4	--	
Turn-off Delay Time	$t_{d(off)}$		--	75	--	
Turn-off Fall Time	t_f		--	16	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz	--	4932	--	pF
Output Capacitance	C_{oss}		--	685	--	
Reverse Transfer Capacitance	C_{rss}		--	566	--	

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	--	--	180	A
Pulsed Source Current	I_{SM}		--	--	720	
Diode Forward Voltage	V_{SD}	I_S=30A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	I_F =20A, di/dt = 100 A/μs	--	30	--	ns
Reverse Recovery Charge	Q_{rr}		--	15	--	nC

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

Fig.1 - Output Characteristics

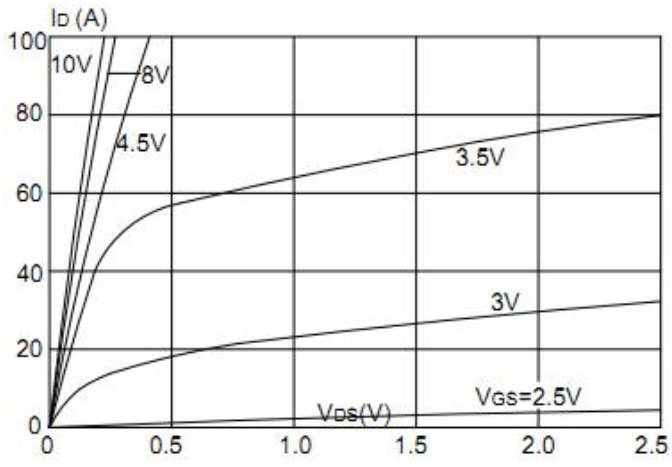


Fig.2 - Transfer Characteristics

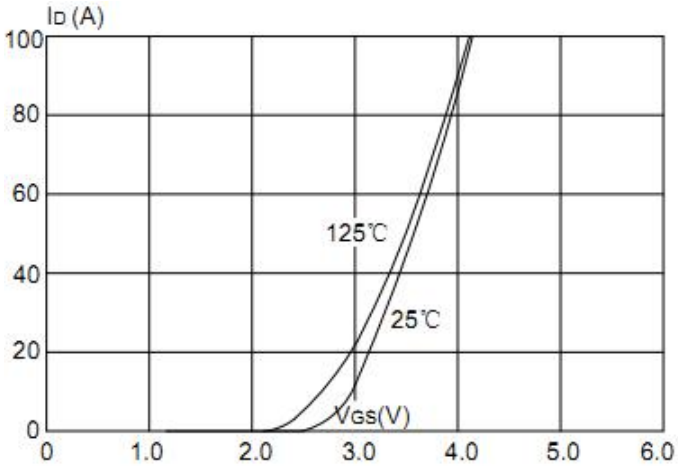


Fig.3 - On-resistance vs. Drain Current

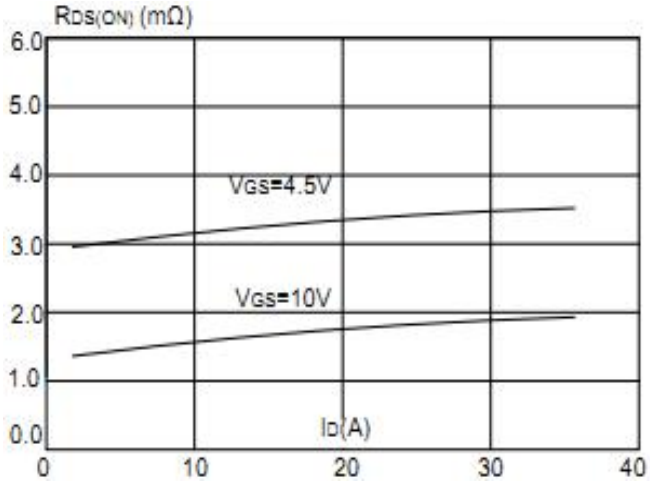


Fig.4 - Body Diode Characteristics

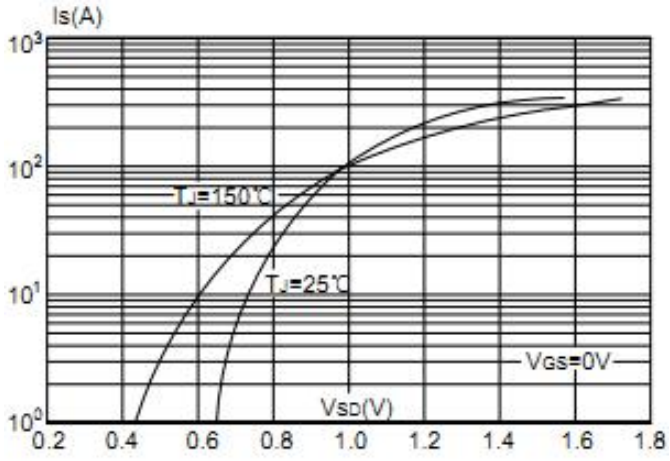


Fig.5 - Gate Charge

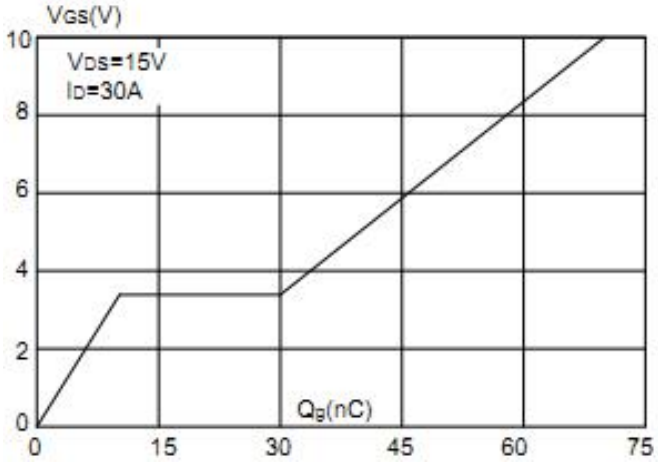
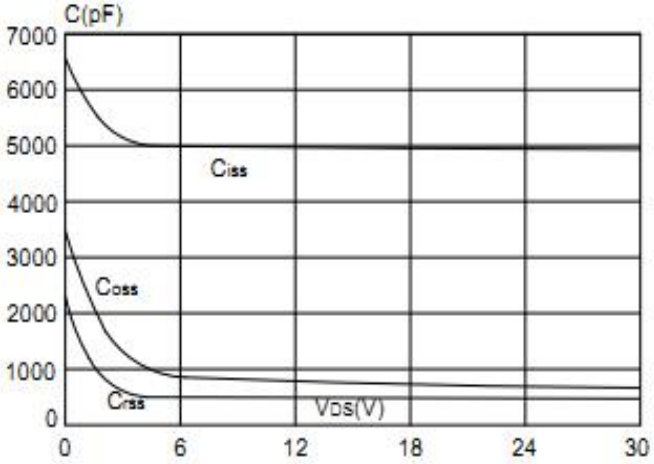


Fig.6 - Capacitance



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

Fig.7 - Drain-to-Source Breakdown Voltage vs. Temperature

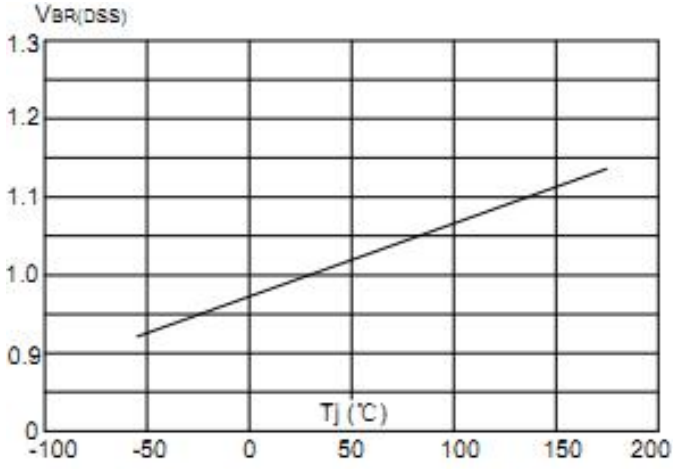


Fig.8 - Normalized On-Resistance vs. Junction Temperature

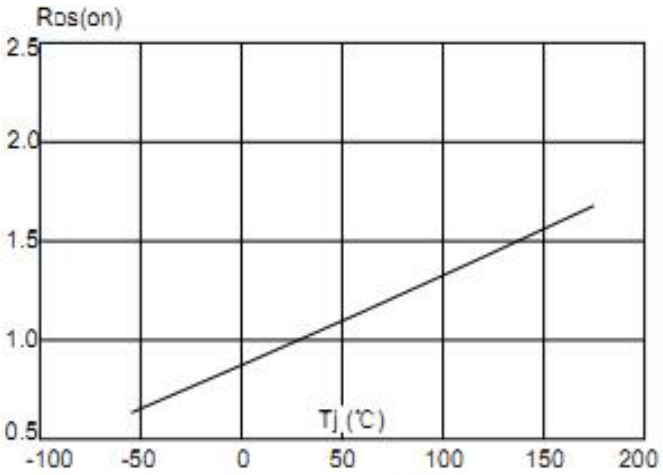


Fig.9 - Safe Operating Area

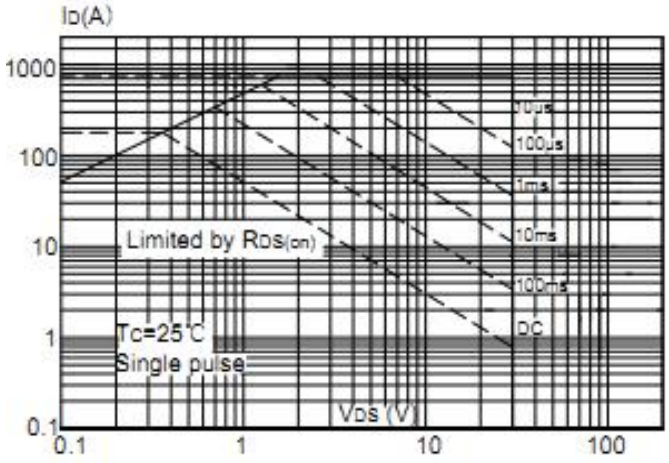


Fig.10 - Drain Current vs. Case Temperature

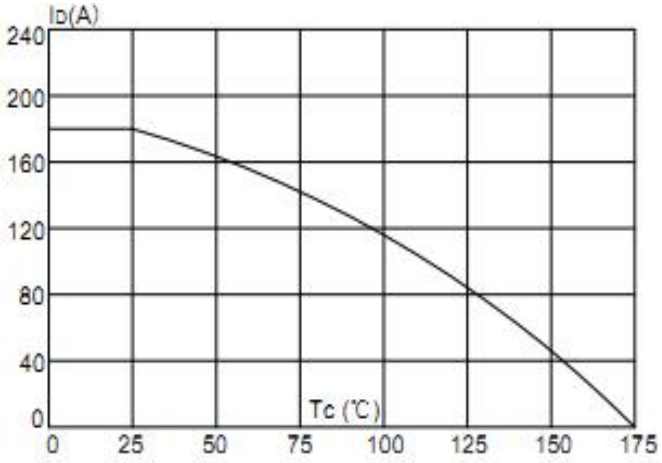
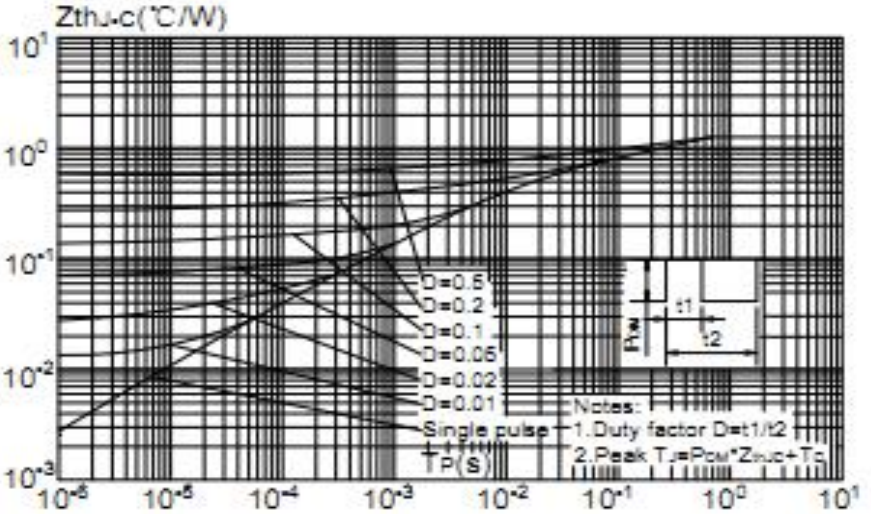
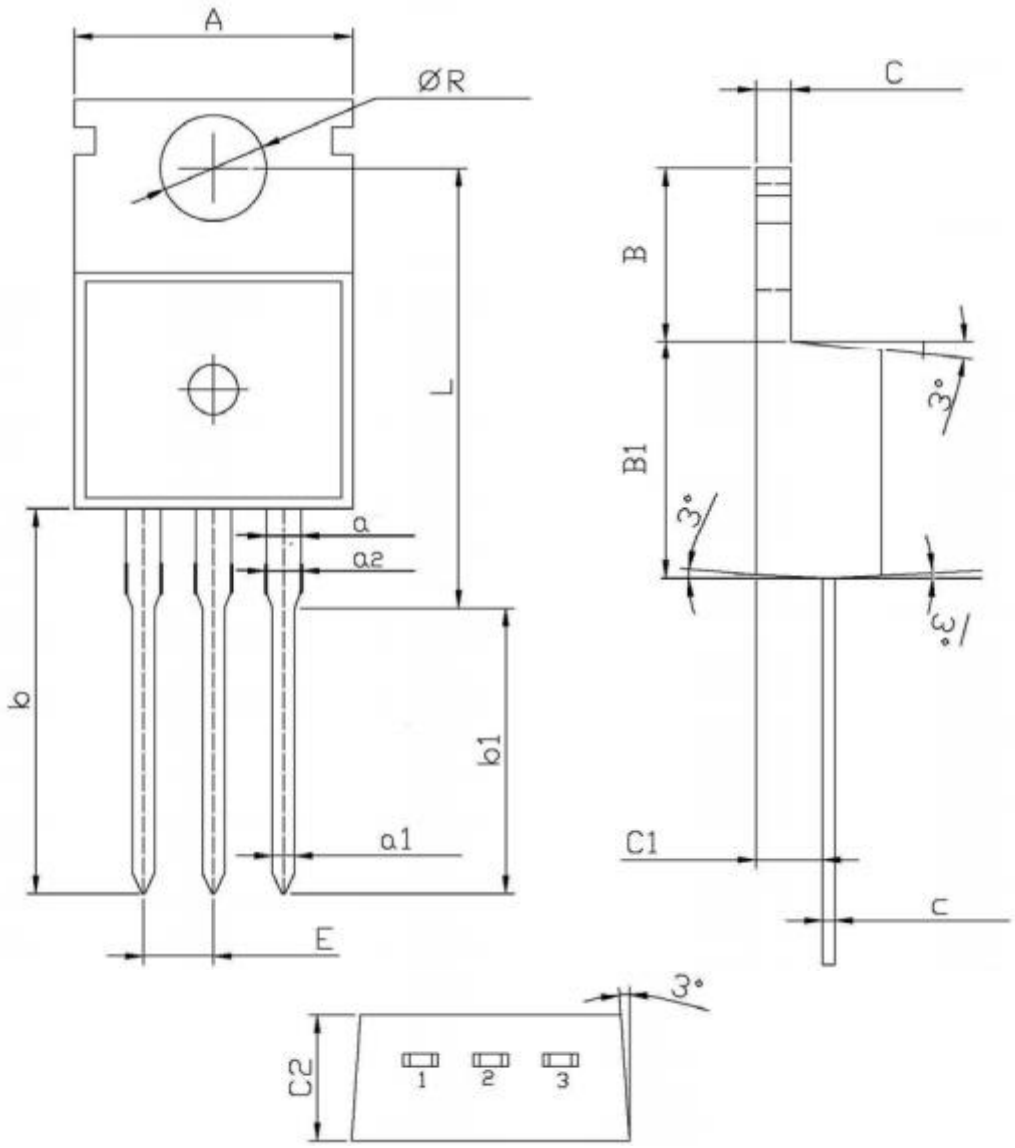


Fig.11 - Normalized Maximum Transient Thermal Impedance



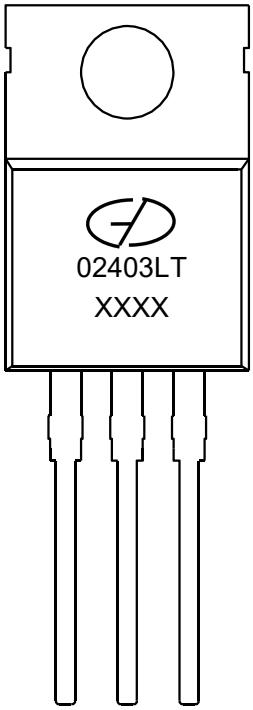
Package Outline Dimensions (Unit: millimeters)

TO-220AB



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	9.8	10.2	C	1.2	1.4
R	3.56	3.64	B	6.3	6.7
L	15.7	16.1	B1	9.0	9.4
b	12.6	13.6	C1	2.2	2.6
b1	9.6	10.6	a1	0.7	0.9
a	1.22	1.32	c	0.4	0.6
E	2.34	2.74	C2	4.3	4.7
a2	1.25	1.45			

Marking Outline



Part Name: GMN02403LT

1. Logo Mark:
2. P/N Mark: 02403LT
3. Date Code: XXXX

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