Features

- Low gate charge
- 100% avalanche tested
- Improved dv/dt capability
- RoHS compliant
- JEDEC Qualification
- Improved ESD performance

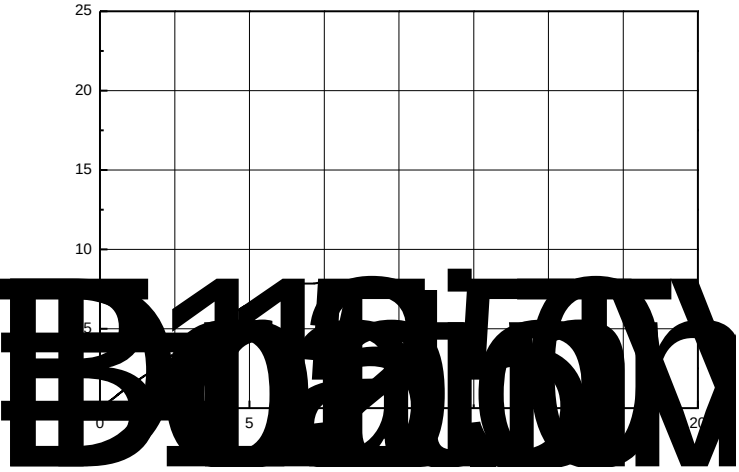
Absolute Maximum Ratings

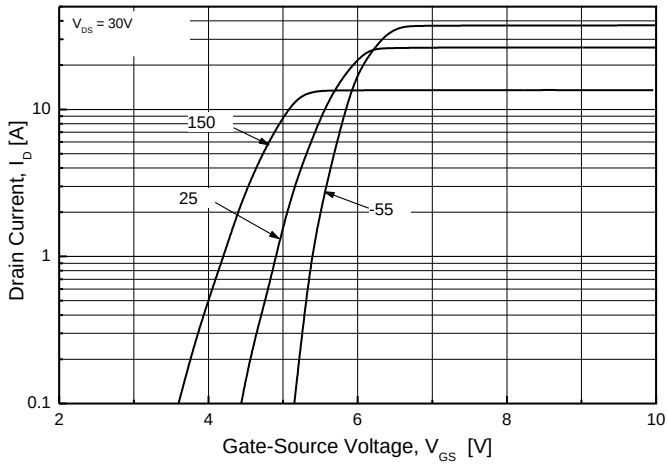
Parameter		Symbol	TMAN11N90AZ	Unit
Drain-Source Voltage		V_{DS}	900	V
Gate-Source Voltage		V_{GS}	30	V
Continuous Drain Current	T_C = 25	I_D	11	A
	T_C = 100		8.09	A
Pulsed Drain Current (Note 1)		I_{DM}	44	A
Single Pulsed A				

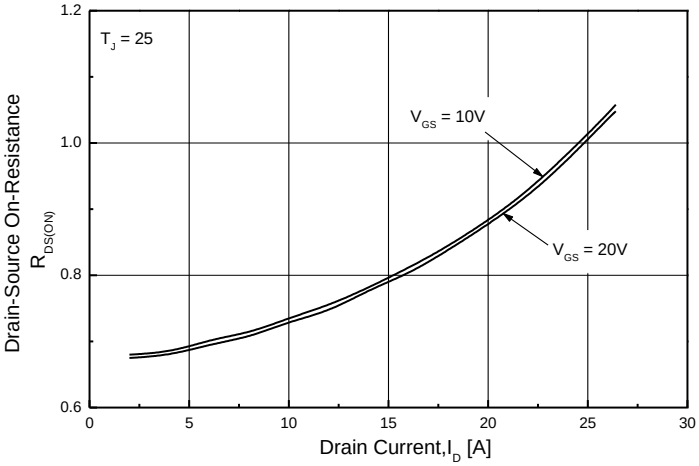
Electrical Characteristics : T_C=25 , unless otherwise noted

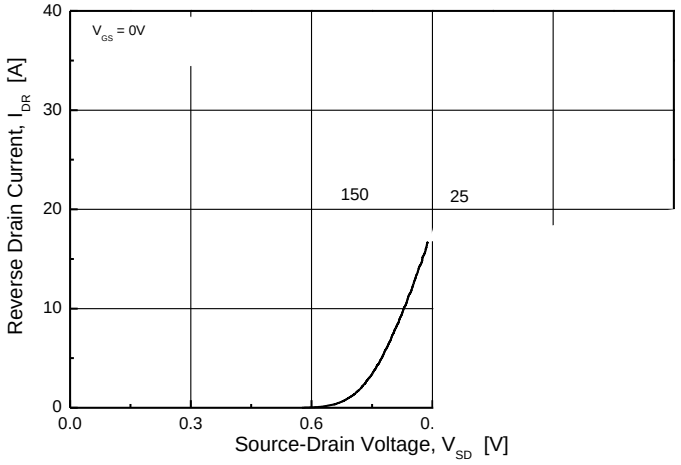
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 µA	900	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 900 V, V_{GS} = 0 V	--	--	1	µA
		V_{DS} = 720 V, T_C = 125°C	--	--	10	µA
Forward Gate-Source Leakage Current	I_{GSSF}	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	µA
Reverse Gate-Source Leakage Current	I_{GSSR}	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	µA
ON						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	3	--	5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 5.5 A	--	0.72	0.9	Ω
Forward Transconductance (Note 4)	g_{FS}	V_{DS} = 30 V, I_D = 5.5 A	--	14	--	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	3240	--	pF
Output Capacitance	C_{oss}		--	297	--	pF
Reverse Transfer Capacitance	C_{rss}		--	38	--	pF
SWITCHING						
Turn-On Delay Time (Note 4,5)	$t_{d(on)}$	V_{DD} = 450 V, I_D = 11 A, R_G = 25	--	76	--	ns
Turn-On Rise Time (Note 4,5)	t_r		--	89	--	ns
Turn-Off Delay Time (Note 4,5)	$t_{d(off)}$		--	288	--	ns
Turn-Off Fall Time (Note 4,5)	t_f		--	71	--	ns
Total Gate Charge (Note 4,5)	Q_g	V_{DS} = 720 V, I_D = 11 A, V_{GS} = 10 V	--	84	--	nC
Gate-Source Charge (Note 4,5)	Q_{gs}		--	15	--	nC
Gate-Drain Charge (Note 4,5)	Q_{gd}		--	42	--	nC
SOURCE DRAIN DIODE						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	--	--	11	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	--	--	44	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I				

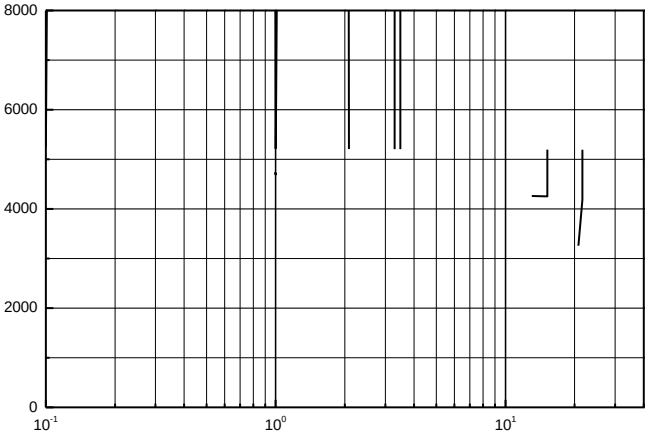
Note :
1. Repeated rating : Pulse width limited by safe operating area
2. L=4.03mH, I_{AS} = 11A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 11A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

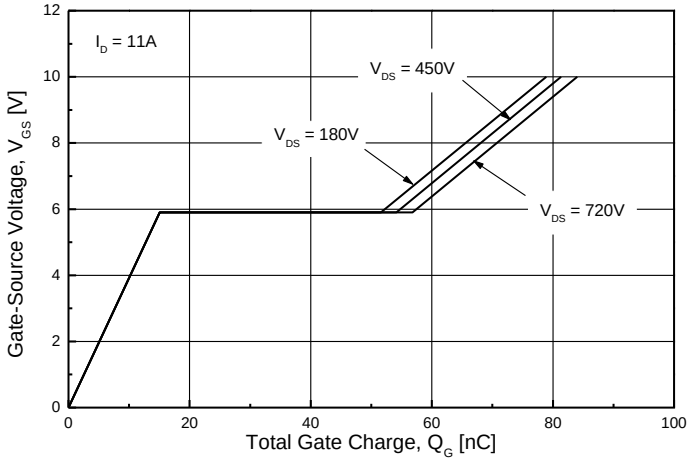


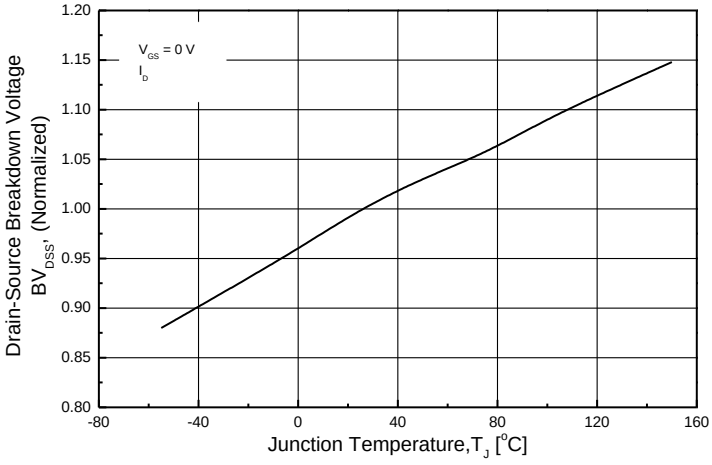

V_{DS} = 30V
150
25
-55
Drain Current, I_D [A]
Gate-Source Voltage, V_{GS} [V]

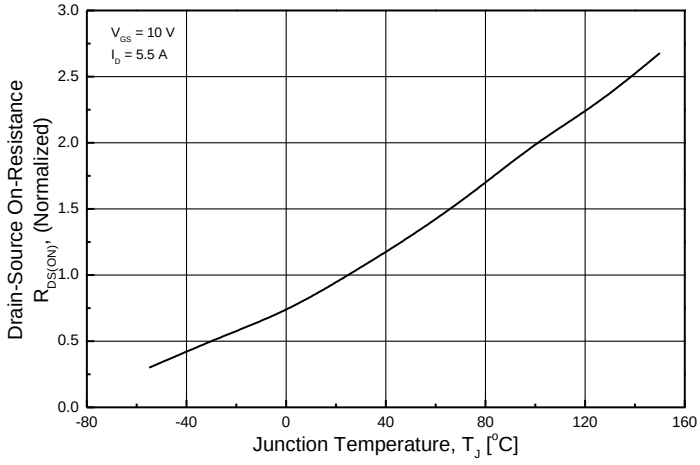

T_J = 25
V_{GS} = 10V
V_{GS} = 20V
Drain-Source On-Resistance
$R_{DS(ON)}$
Drain Current,I_D [A]

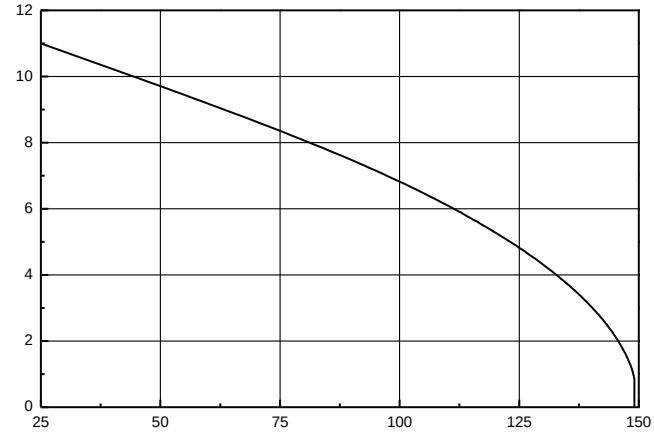

V_{GS} = 0V
150
25
Reverse Drain Current, I_{DR} [A]
Source-Drain Voltage, V_{SD} [V]

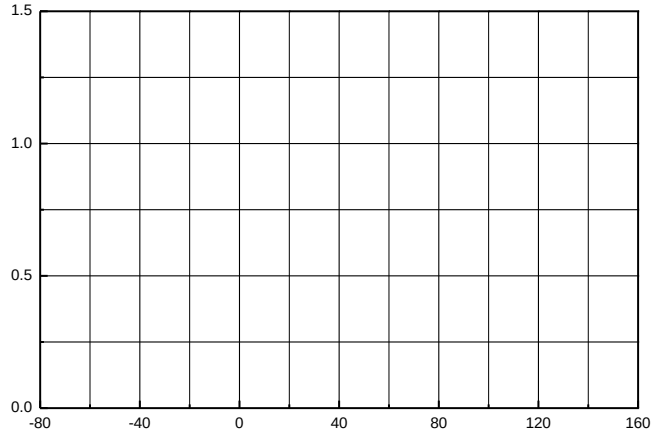


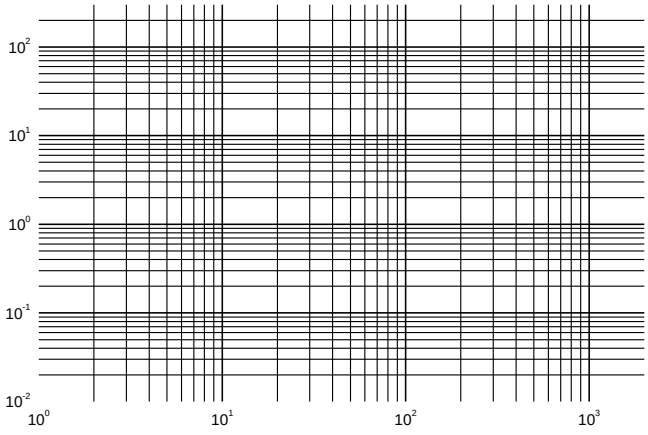

I_D = 11A
V_{DS} = 450V
V_{DS} = 180V
V_{DS} = 720V
Gate-Source Voltage, V_{GS} [V]
Total Gate Charge, Q_G [nC]

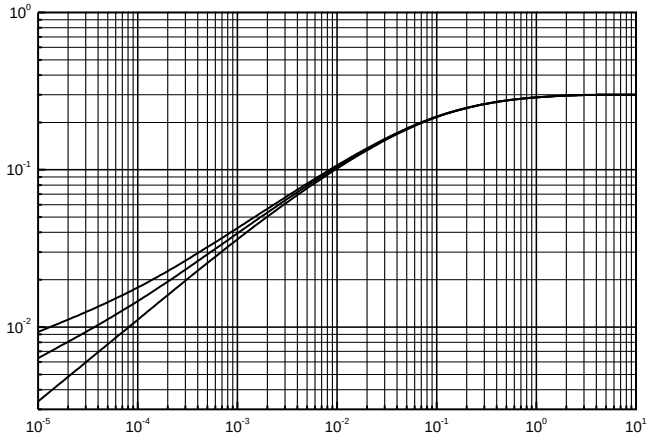

Drain-Source Breakdown Voltage
BV_{DSS}, (Normalized)
V_{GS} = 0 V
I_D
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
-80
-40
0
40
80
120
160
Junction Temperature,T_J [°C]


Drain-Source On-Resistance
$R_{DS(ON)}$, (Normalized)
V_{GS} = 10 V
I_D = 5.5 A
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160
Junction Temperature, T_J [°C]

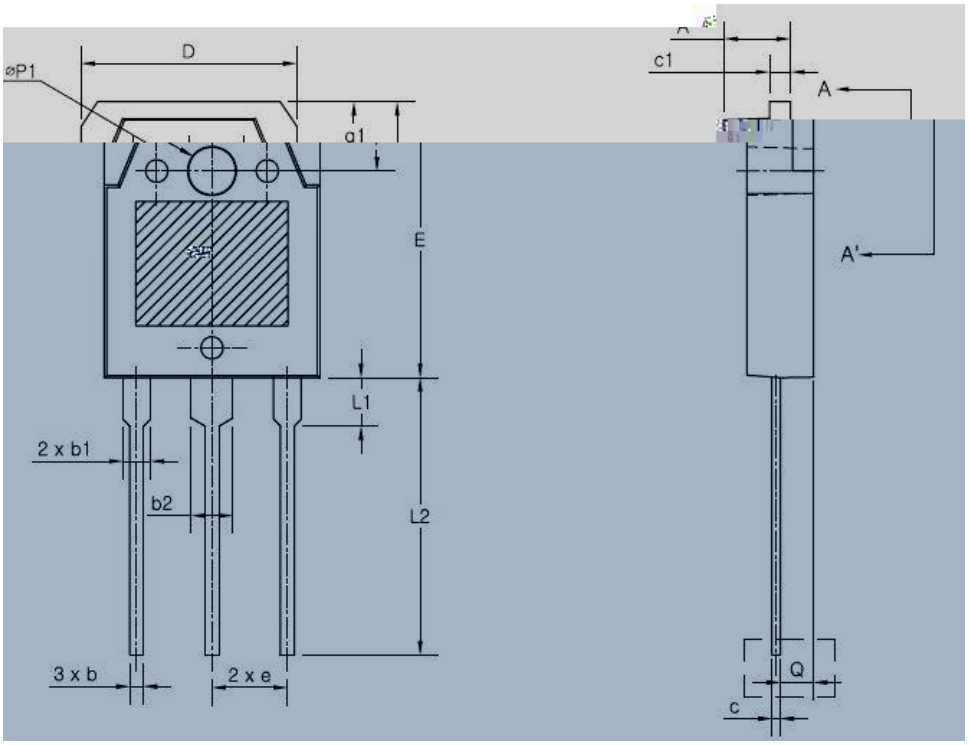

12
10
8
6
4
2
0
25
50
75
100
125
150

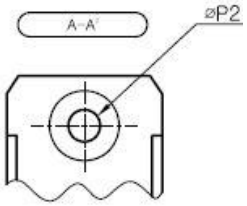

1.5
1.0
0.5
0.0
-80
-40
0
40
80
120
160


10^2
10^1
10^0
10^{-1}
10^{-2}
10^0
10^1
10^2
10^3


10^0
10^{-1}
10^{-2}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^0
10^1

TO-3PN MECHANICAL DATA





SYMBOL	MIN	NOM	MAX
A	4.60	4.80	5.00
øP1	3.30	3.40	3.50