Features

- Low gate charge
- Improved dv/dt capability
- Improved ESD performance
- RoHS compliant
- JEDEC Qualification

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	900	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C = 25	I_D	9*	A
	T_C = 100		5.9 *	A
Pulsed Drain Current (Note 1)		I_{DM}	36*	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	454	mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	9	A
Repetitive Avalanche Energy (Note 1)		E_{AR}	29	mJ
Power Dissipation	T_C = 25	P_D	89	W
	Derate above 25		0.71	W/
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	
Maximum lead temperature for soldering purposes,		T_L	300	

Thermal Characteristics

Electrical Characteristics : T_C=25 , unless otherwise noted

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
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	--	--	10	µA
		V_{DS} = 720 V, T_C = 125 ℃	--	--	100	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	2.0	--	4.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 4.5 A	--	1.12	1.4	Ω
Forward Transconductance (Note 4)	g_{FS}	V_{DS} = 30 V, I_D = 4.5 A	--	17	--	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	2740	--	pF
Output Capacitance	C_{oss}		--	192	--	pF
Reverse Transfer Capacitance	C_{rss}		--	27	--	pF
SWITCHING						
Turn-On Delay Time (Note 4,5)	$t_{d(on)}$	V_{DD} = 450 V, I_D = 9 A, R_G = 25	--	52	--	ns
Turn-On Rise Time (Note 4,5)	t_r		--	97	--	ns
Turn-Off Delay Time (Note 4,5)	$t_{d(off)}$		--	212	--	ns
Turn-Off Fall Time (Note 4,5)	t_f		--	159	--	ns
Total Gate Charge (Note 4,5)	Q_g	V_{DS} = 720 V, I_D = 9 A, V_{GS} = 10 V	--	72	--	nC
Gate-Source Charge (Note 4,5)	Q_{gs}		--	11	--	nC
Gate-Drain Charge (Note 4,5)	Q_{gd}		--	31	--	nC
SOURCE DRAIN DIODE						
Maximum Continuous Drain-Source Diode Forward Current	I_S	----	--	--	9.0	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	----	--	--	38	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 9 A	--	--	1.5	V
Reverse Recovery Time (Note 4)	t_{rr}	V_{GS} = 0 V, I_S = 9 A, dI_F / dt = 100 A/µs	--	570	--	ns
Reverse Recovery Charge (Note 4)	Q_{rr}		--	6.6	--	µC

Note :

1. Repeated rating : Pulse width limited by safe operating area
2. L=10.6mH, I_{AS} = 9A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25 , not subject to production test verified by design/characterization
3 I_{SD} 9A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

Fig. 1 Output Characteristics

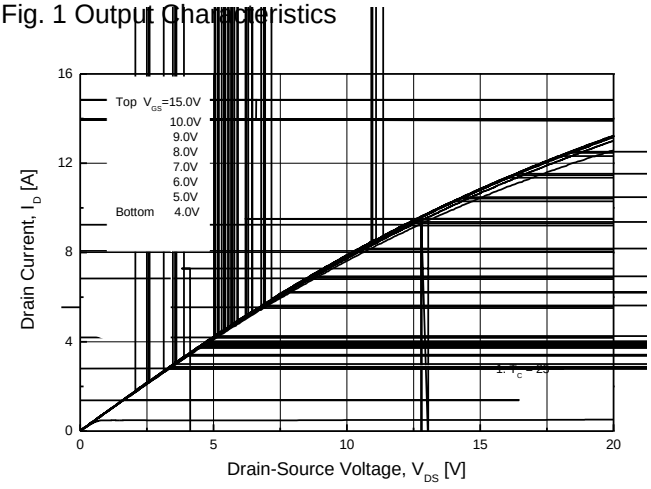


Fig. 2 Transfer Characteristics

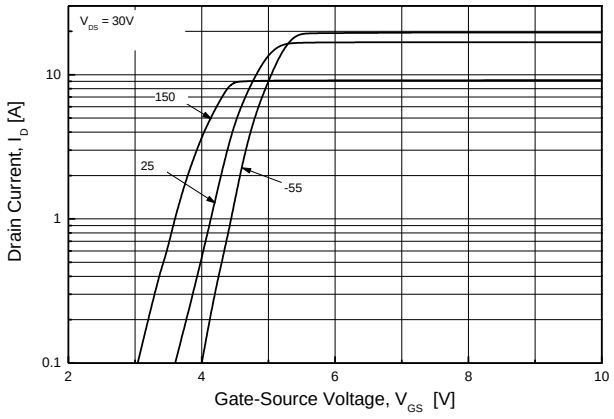


Fig. 3 On-Resistance vs.
Drain Current and Gate voltage

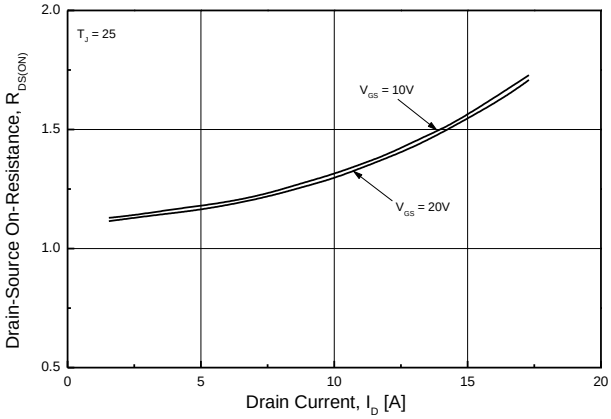


Fig. 4 Body Diode Forward Voltage vs.
Source Current and Temperature

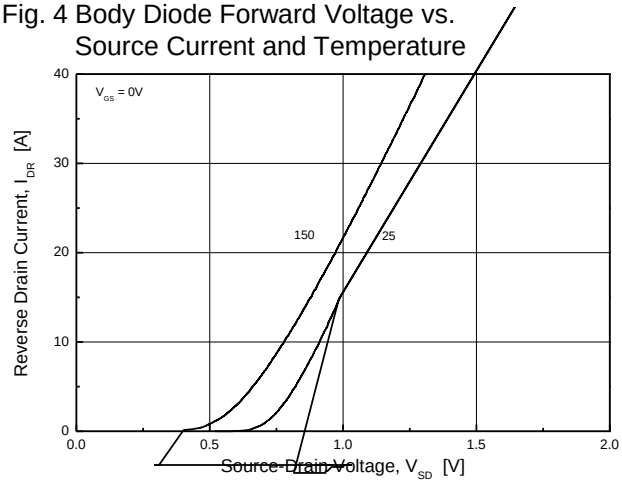


Fig. 5 Capacitance Characteristics

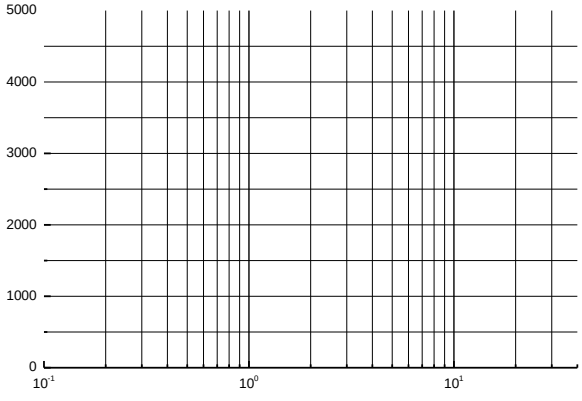


Fig. 6 Gate Charge Characteristics

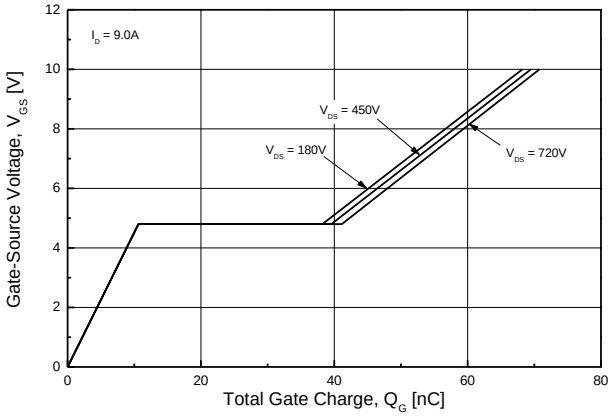


Fig. 7 Breakdown Voltage vs. Temperature

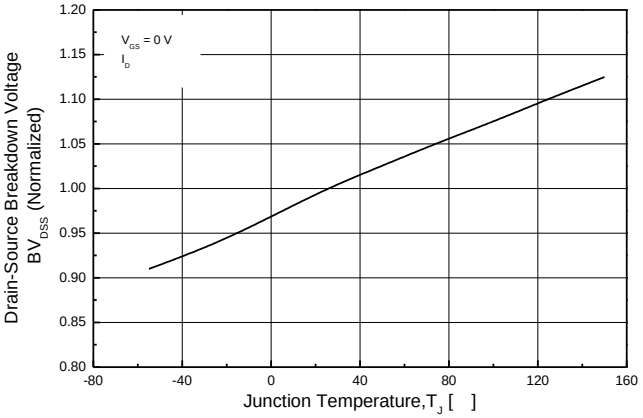


Fig. 8 On-Resistance vs. Temperature

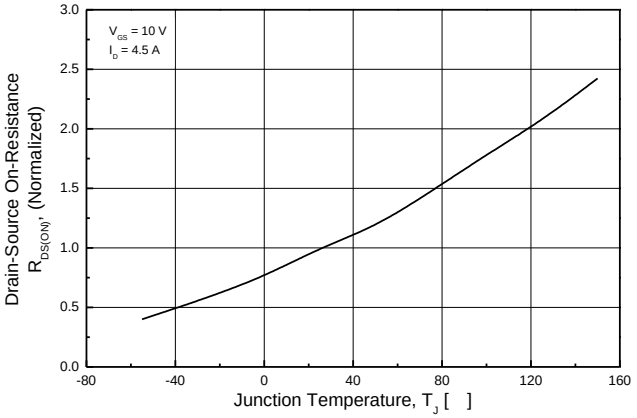


Fig. 9 Maximum Drain Current vs. Case Temperature

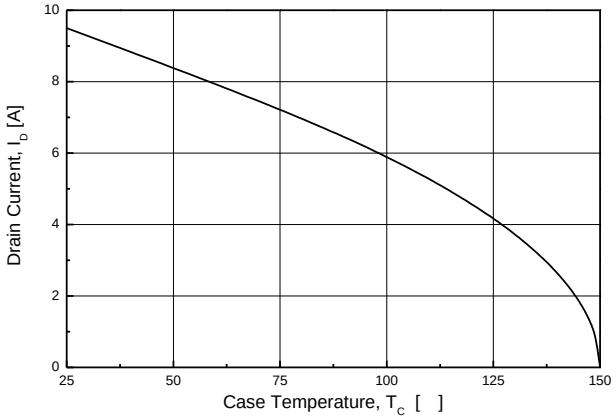


Fig. 10 Gate Threshold Voltage vs. Junction Temperature

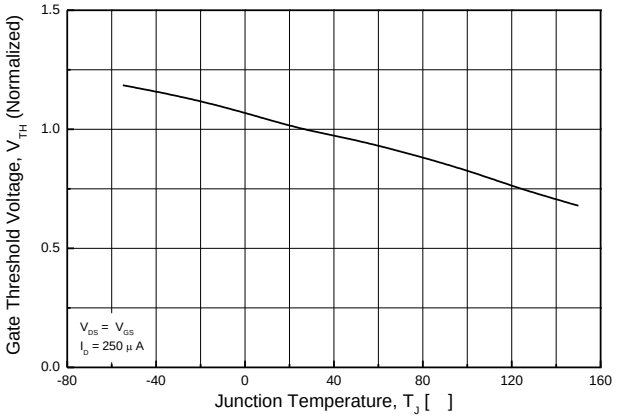


Fig. 11 Maximum Safe Operating Area

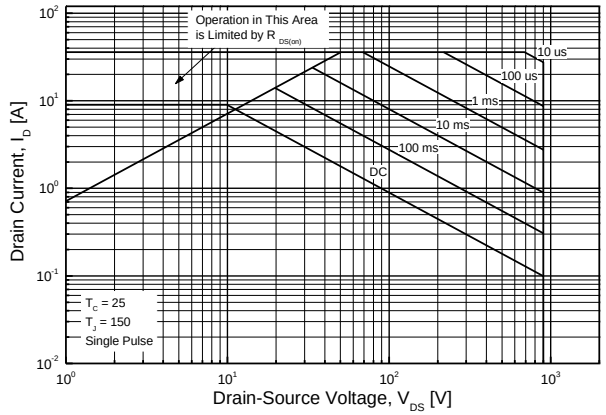
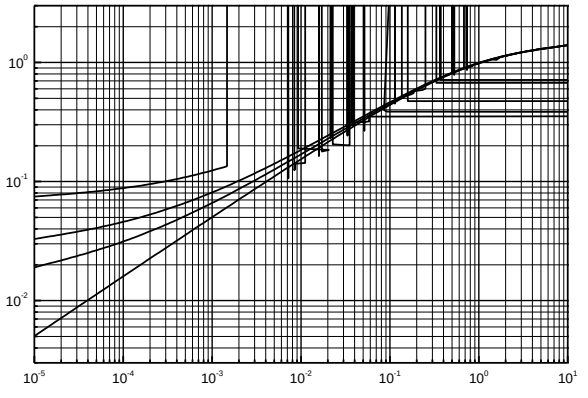
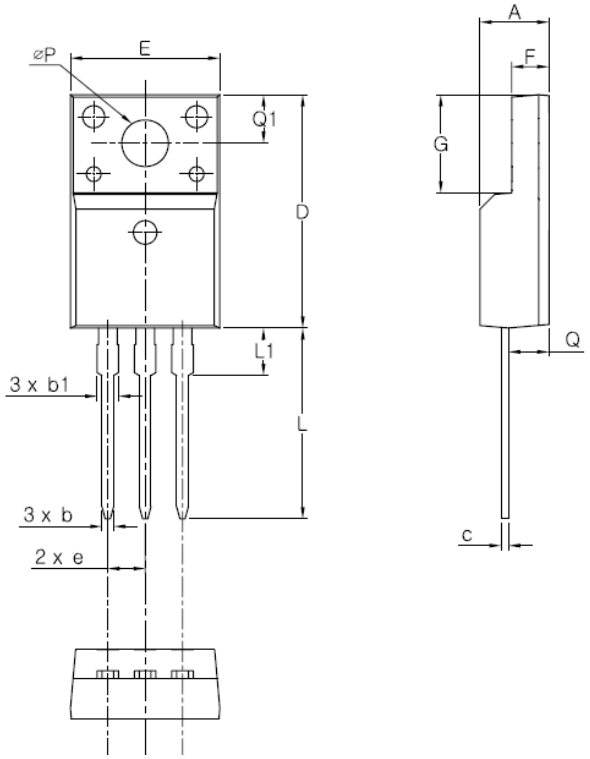


Fig. 12 Transient Thermal Response Curve



TO-220F-3L MECHANICAL DATA



Disclaimer :

TRinno technology reserves the right to make changes without notice to products herein to improve reliability, performance, or design. The information given in this document is believed to be accurate and reliable. However, it shall in no event be regarded as a guarantee of conditions and characteristics. With respect to any information regarding the application of the device, TRinno technology hereby disclaims any and all warranties and liabilities of any kind, including without