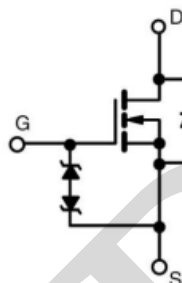


N-Channel Enhancement Mode Field Effect Transistor

MCR60F030PT

TO-247

FRD MOSFET
ESD protect



V_{DS}	600	V
$R_{DS(on),TYP}$	26	m Ω
I_D	80	A

Features

- 1.Low on – resistance
- 2.Package TO-247

Applications

- 1.PC power
- 2.Telecom power
- 3.Server power
- 4.EV Charger
- 5.Motor driver

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Absolute Maximum Ratings

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	600	V
Drain Current –continuous @25°C	I_D	80	A
Drain Current –continuous @100°C	I_D	48	A
Pulsed Drain Current ¹	I_{DM}	320	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulse Avalanche ²	E_{AS}	3.5	J
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10sec.)	T_L	300	°C

Note:

1. Pulse width limited by maximum junction temperature.
2. $V_{DD} = 90\text{V}$, $V_{DS} = 600\text{V}$, $L=30\text{mH}$

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
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Static Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise stated)

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	600	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=600V, V_{GS}=0V$	--	--	10	μA
	Zero Gate Voltage Drain Current ($T_j = 125^{\circ}\text{C}$)	$V_{DS}=600V, V_{GS}=0V$	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 30V$	--	--	± 10	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	3	3.5	4	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=40A$	--	26	30	m Ω
V_{SD}	Forward on voltage (Note1)	$I_{SD}=80A, V_{GS}=0V$	--	1.0	1.4	V

Dynamic Electrical Characteristics @ $T_j = 25^{\circ}\text{C}$ (unless otherwise stated)

C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V$ $f=100\text{KHz}$	--	9140	--	pF
C_{oss}	Output Capacitance		--	884	--	pF
C_{rss}	Reverse Transfer Capacitance		--	2.4	--	pF
Q_g	Total Gate Charge	$V_{DD}=400V, I_D=40A,$ $V_{GS}=10V$	--	195	--	nC
Q_{gs}	Gate-Source Charge		--	58	--	nC
Q_{gd}	Gate-Drain Charge		--	61	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	$V_{DS}=400V, I_D=40A,$ $R_G=2\Omega, V_{GS}=10V$	--	41.3	--	ns
Tr	Turn-on Rise Time		--	24.6	--	ns
Td(off)	Turn-Off Delay Time		--	138.3	--	ns
Tf	Turn-Off Fall Time		--	19.8	--	ns

Source- Drain Diode Characteristics@ $T_j = 25^\circ C$ (unless otherwise stated)

IS	Continuous Current		--	--	80	A
VSD	Forward Voltage	$I_F = I_S, V_{GS} = 0V$	--	--	1.5	V
Trr	Reverse Recovery Time	$I_F=40A,$ $di/dt=100A/\mu s$	--	396	--	ns
Qrr	Reverse Recovery Charge		--	3.2	--	nC
Ton	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Typical Characteristics

Fig. 1

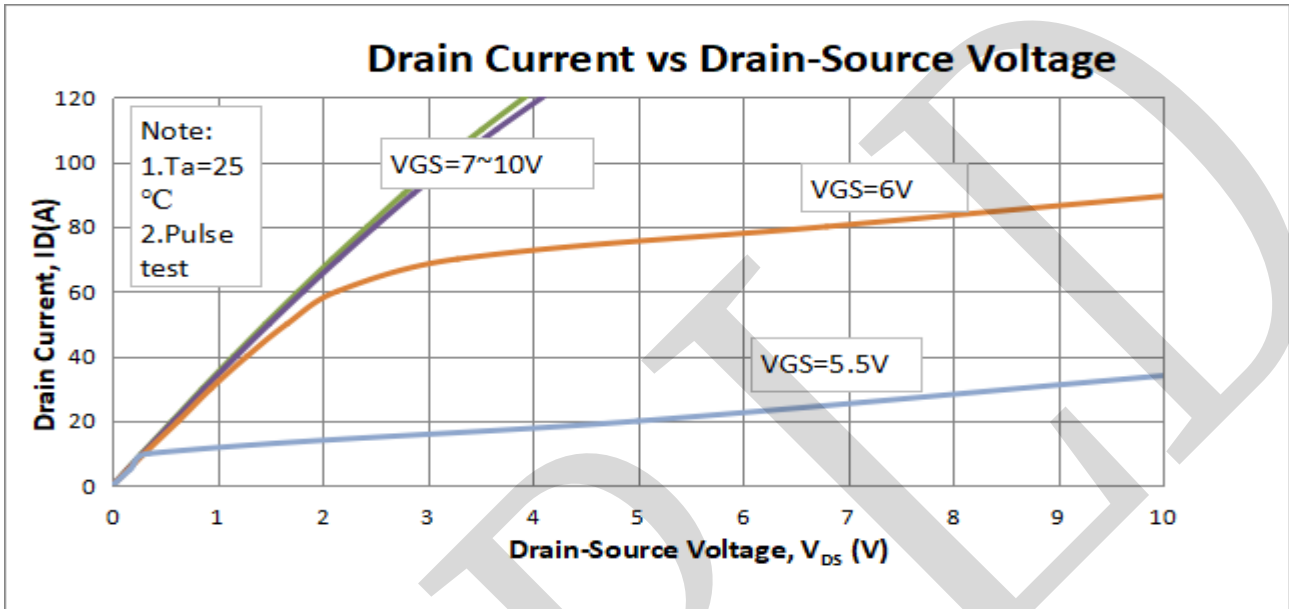
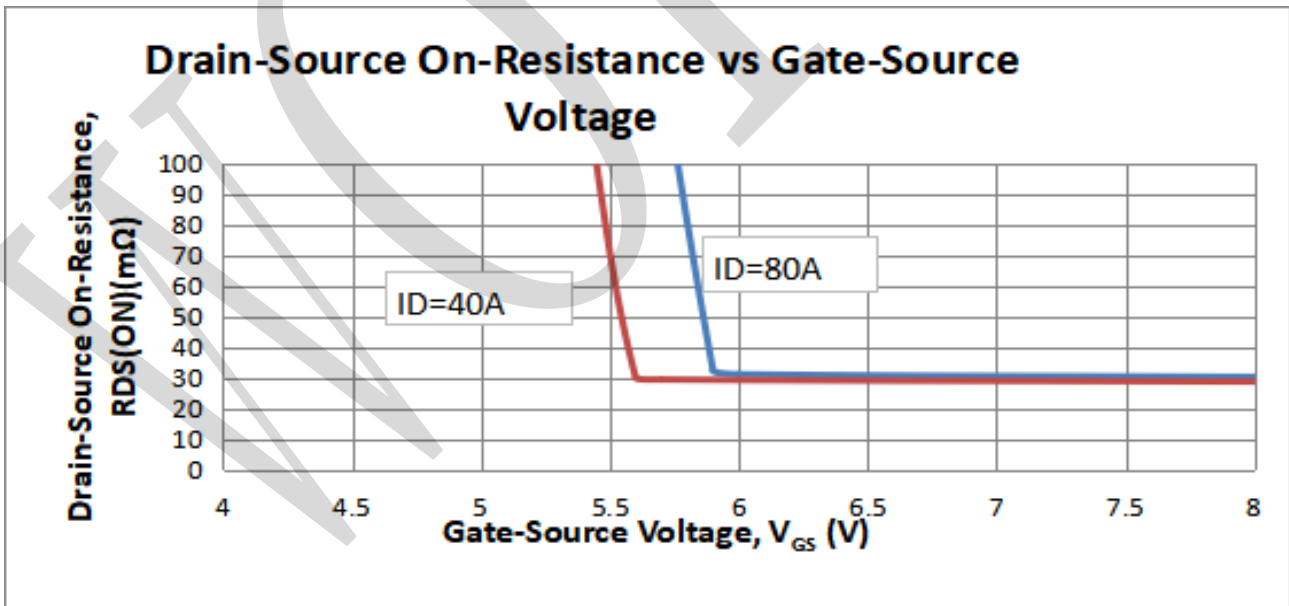


Fig. 2



Typical Characteristics

Fig. 3

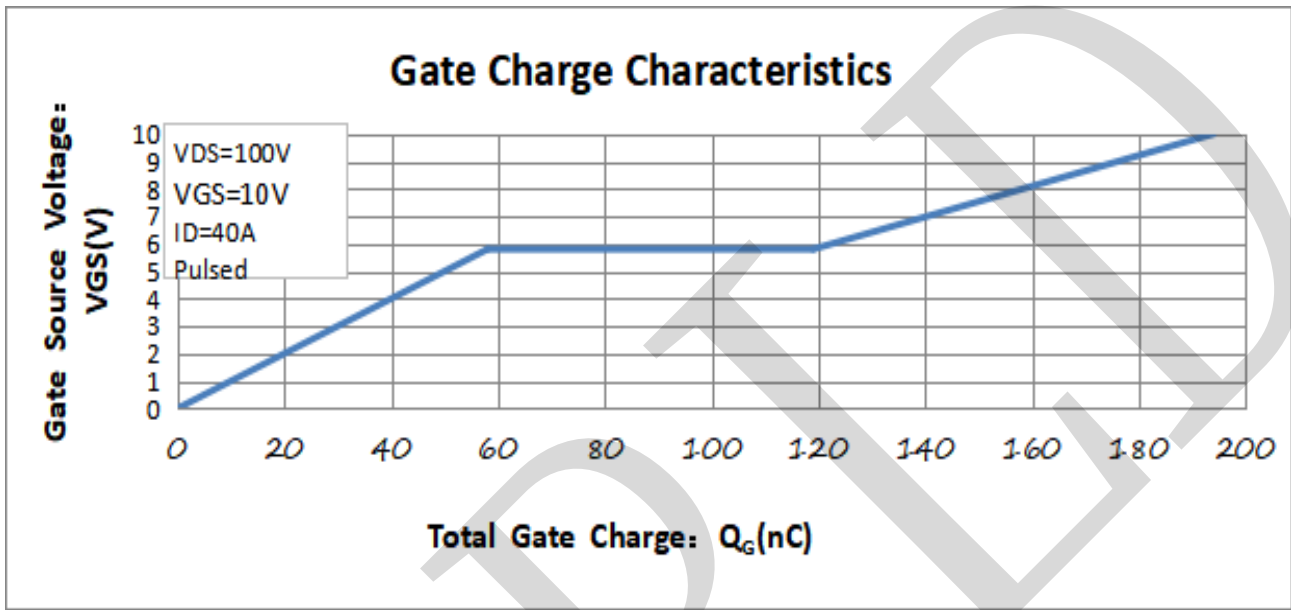
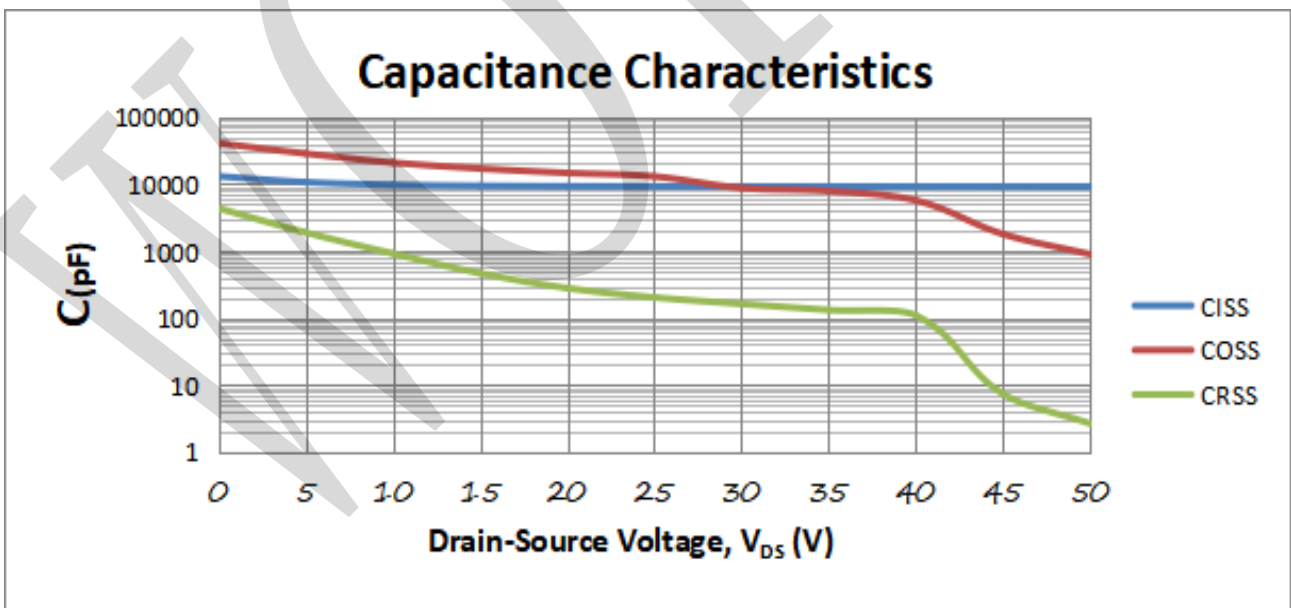


Fig. 4



Typical Characteristics

Fig. 5

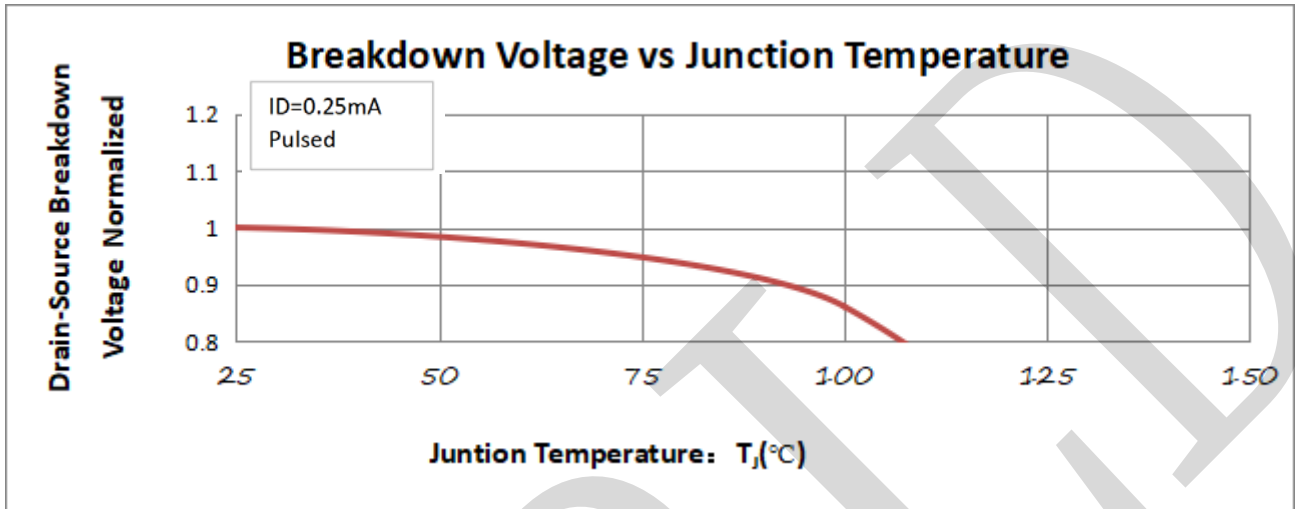
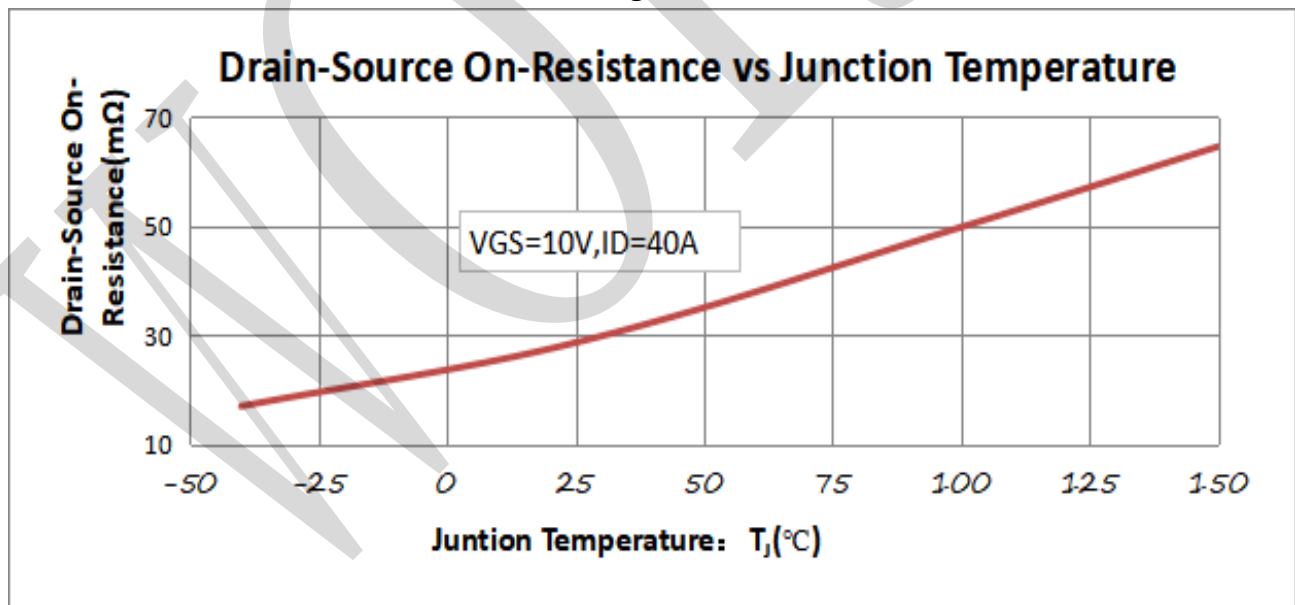


Fig. 6



Typical Characteristics

Fig.7

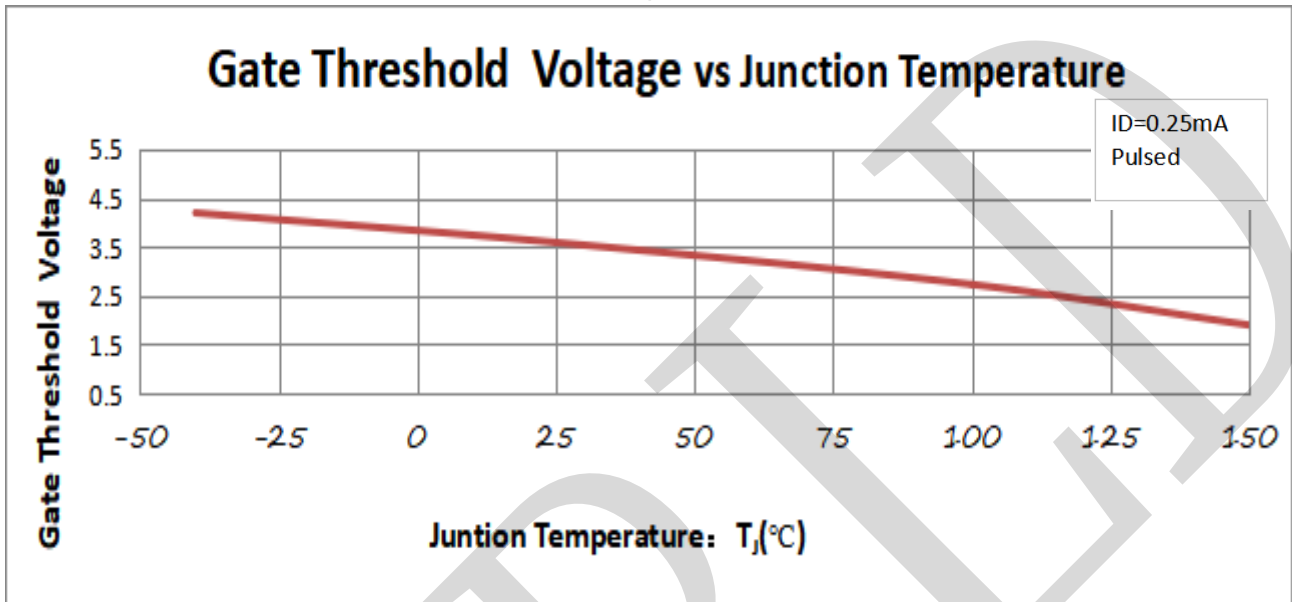
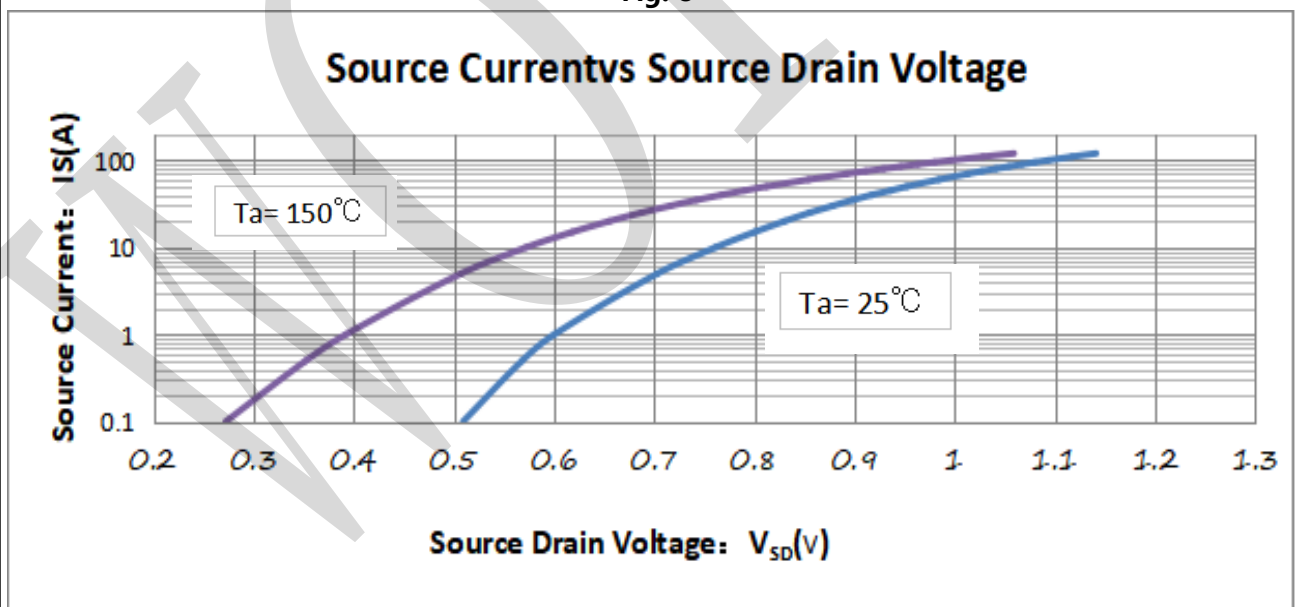


Fig. 8



Typical Characteristics

Fig. 9

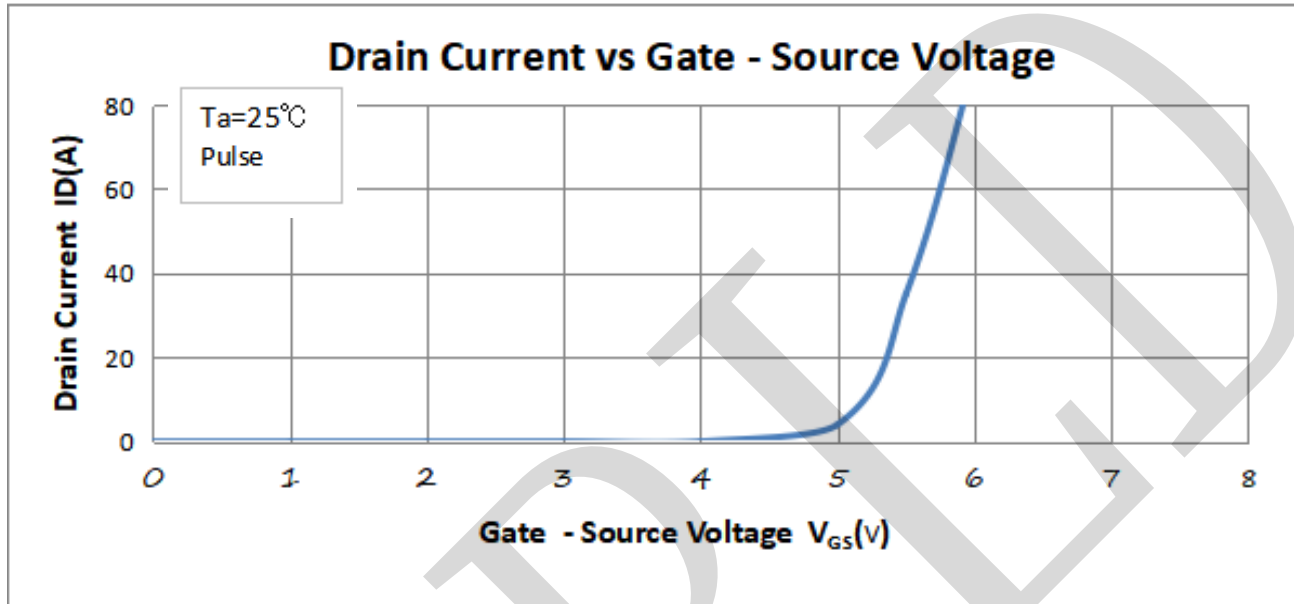
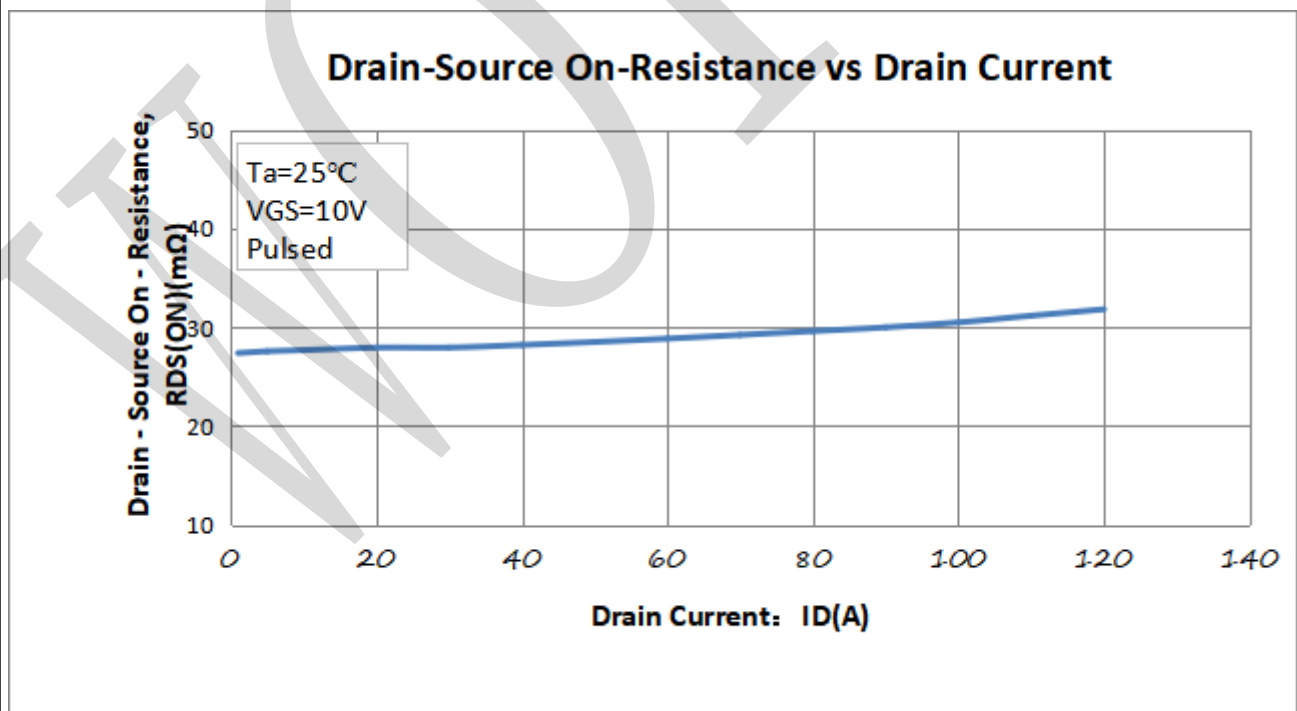
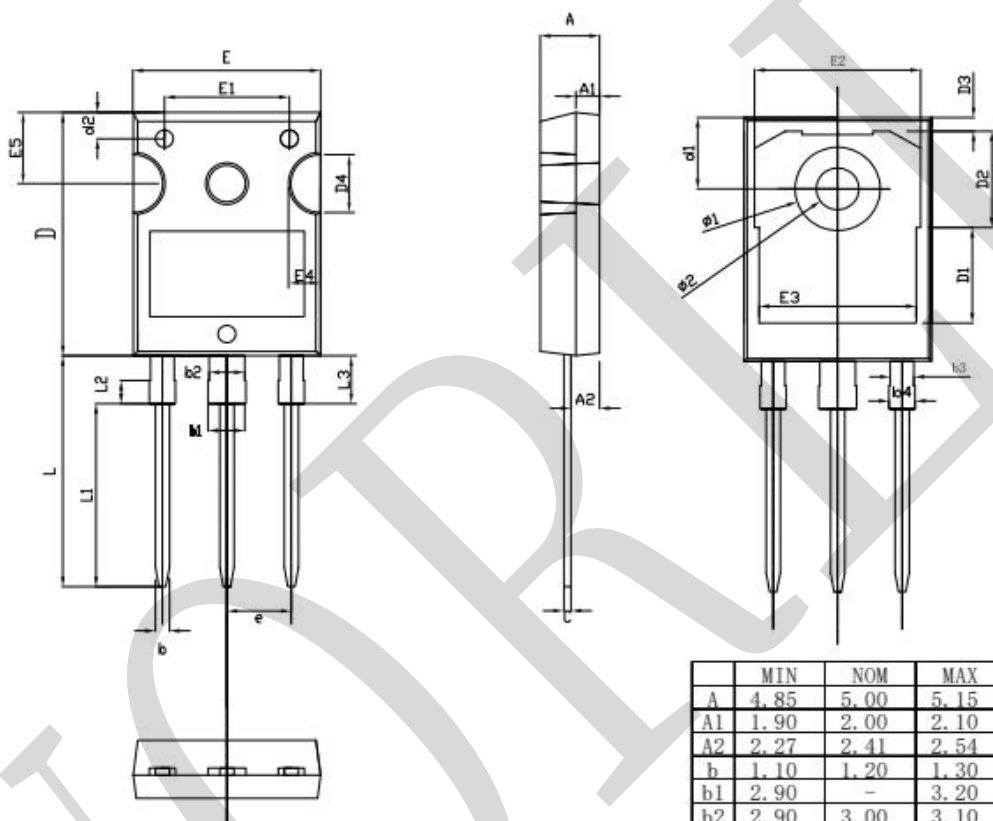


Fig. 10

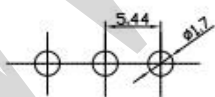


PACKAGE OUTLINE DIMENSIONS

TO-247



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.85	5.00	5.15
A1	1.90	2.00	2.10
A2	2.27	2.41	2.54
b	1.10	1.20	1.30
b1	2.90	-	3.20
b2	2.90	3.00	3.10
b3	1.90	2.00	2.10
b4	2.00	-	2.20
c	0.55	0.60	0.68
D	20.80	21.00	21.10
D1	-	8.23	-
D2	-	8.32	-
D3	-	1.17	-
D4	3.68	4.90	5.10
d1	6.04	6.15	6.30
d2	2.20	2.30	2.40
E	15.70	15.80	16.00
E1	-	10.50	-
E2	-	14.02	-
E3	-	13.50	-
E4	2.20	2.40	2.60
E5	5.49	5.80	6.00
e	5.34	5.44	5.54
L	19.72	19.92	20.12
L1	-	15.79	-
L2	-	1.98	-
L3	4.00	4.10	4.47
ø1	7.10	7.19	7.30
ø2	3.50	3.60	3.70