

8A, 650V N-CHANNEL POWER MOSFET

DESCRIPTION

The 8N65 is a high voltage power MOSFET combines advanced planar MOSFET designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and high rugged avalanche characteristics. This power MOSFET is usually used in high speed switching applications of switching power supplies and adaptors.

FEATURES

- * High Current Rating
- * Lower $R_{DS(on)}$
- * Lower Capacitance
- * Lower Total Gate Charge
- * Tighter VSD Specifications
- * Avalanche Energy Specified

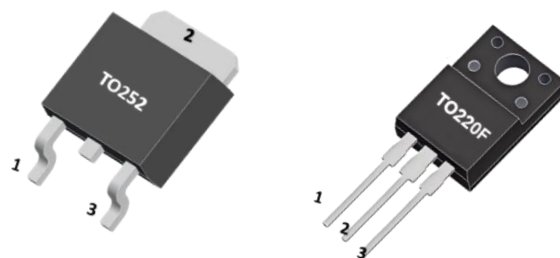
MARKING



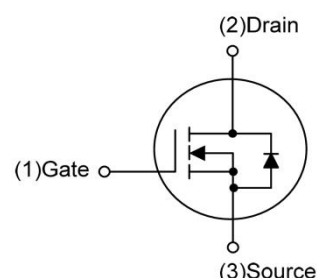
8N65 =Device Code

XXXX=Date Code

Solid Dot=Green molding compound



SYMBOL



ABSOLUTE MAXIMUM RATINGS(TA=25°C, unless otherwise specified.)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	650	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current		I_D	8	A
Pulsed Drain Current (Note 2)		I_{DM}	16	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	320	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.1	V/ns
Power Dissipation	TO-220F	P_D	36	W
	TO-252		50	
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes:1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating : Pulse width limited by T_J

3. $L=7.1mH$, $I_{AS}=8A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$

4. $I_{SD} \leq 8A$, $di/dt \leq 200A/\mu s$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ C$



8N65

N-CHANNEL POWER MOSFET

THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220F	θ_{JA}	62.5	°C/W
	TO-252		100	
Junction to Case	TO-220F	θ_{JC}	3.47	°C/W
	TO-252		2.5(Note)	

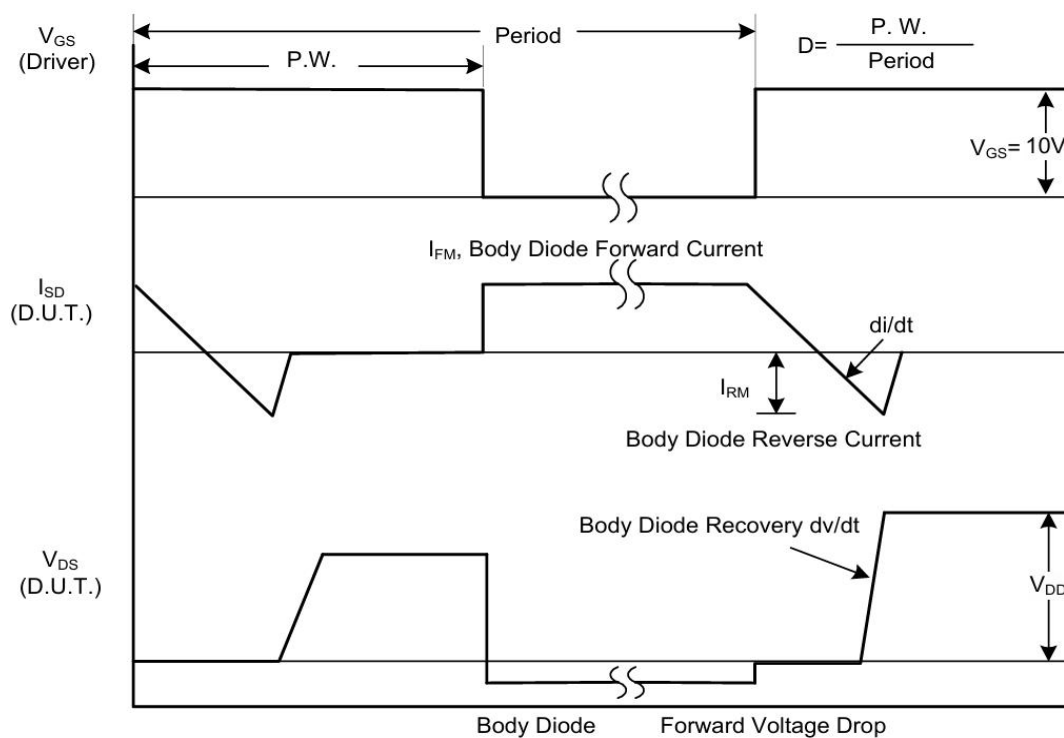
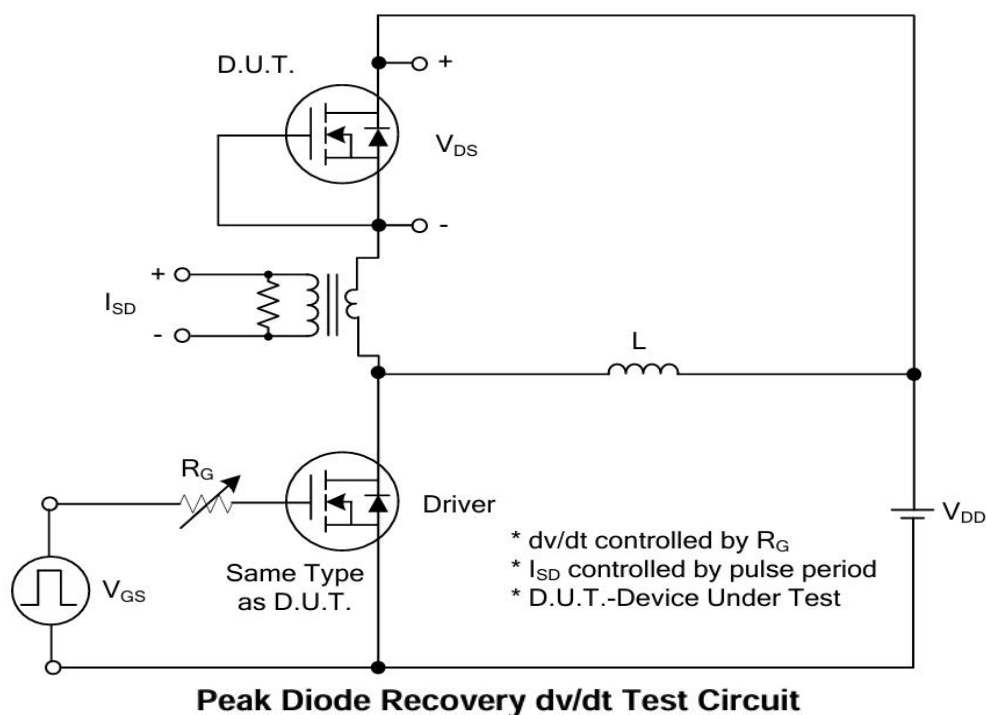
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=250μA	650			V
Zero gate voltage drain current	IDSS	VDS=650V, VGS=0V			10	μA
Gate- Source Leakage Current	IGSS	VGS=± 30V, VDS=0V			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	VGS(TH)	VDS=VGS , ID=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	RDS(ON)	VGS=10V, ID=4A			1.2	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	CISS	VDS=25V,VGS=0V f= 1.0MHz		1070		pF
Output Capacitance	COSS			114		pF
Reverse Transfer Capacitance	CRSS			15.5		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	QG	VDS=520V, VGS= 10V ID=8A ,IG=1mA (Note 1, 2)		29		nC
Gate-Source Charge	QGS			5.5		nC
Gate-Drain Charge	QGD			9.2		nC
Turn-On Delay Time	tD(ON)	VDS=100V, VGS= 10V ID=8A ,RG=25Ω (Note 1, 2)		12		ns
Turn-On Rise Time	tR			23		ns
Turn-Off Delay Time	tD(OFF)			105		ns
Turn-Off Fall Time	tF			43		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note 1)	VSD	VGS = 0 V, IS = 8A			1.4	V
Continuous Drain-Source Current	IS				8	A
Pulsed drain-source diode forward current	ISM				16	A
Reverse Recovery Time(Note 1)	trr	Is =8A,VGS = 0V		384		ns
Reverse Recovery Charge	Qrr	dIF/dt = 100A/μs		3.4		μC

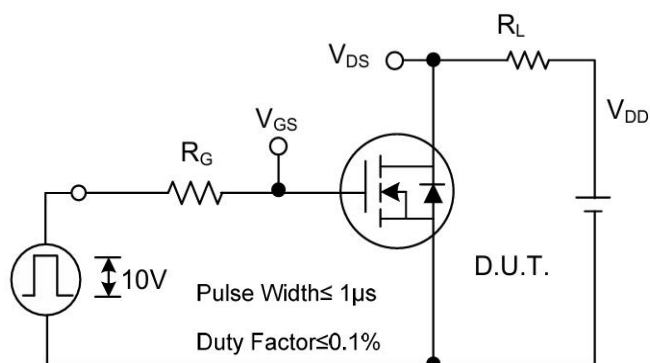
Note: 1. Pulse Test: Pulse width≤300μs, duty cycle ≤2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

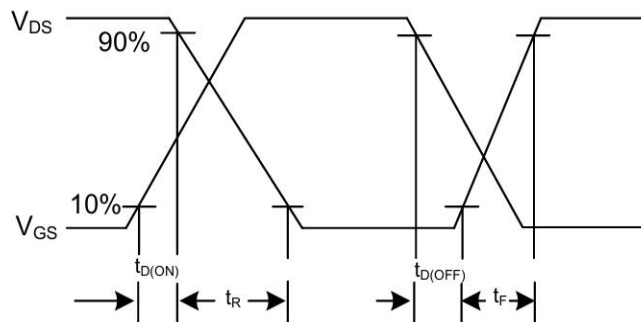


Peak Diode Recovery dv/dt Waveforms

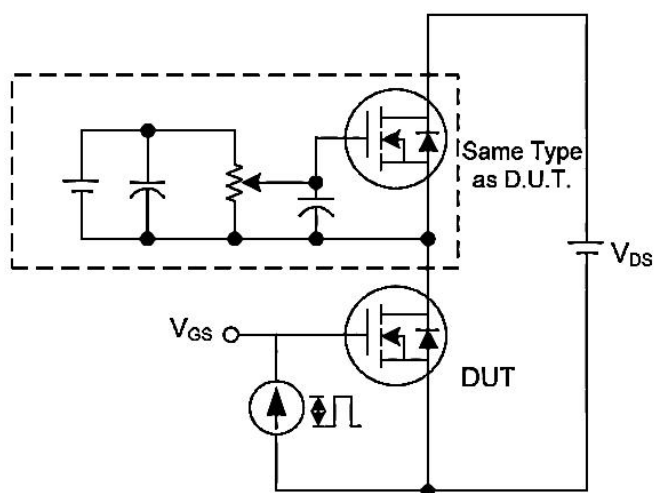
■ TEST CIRCUITS AND WAVEFORMS(Con.t)



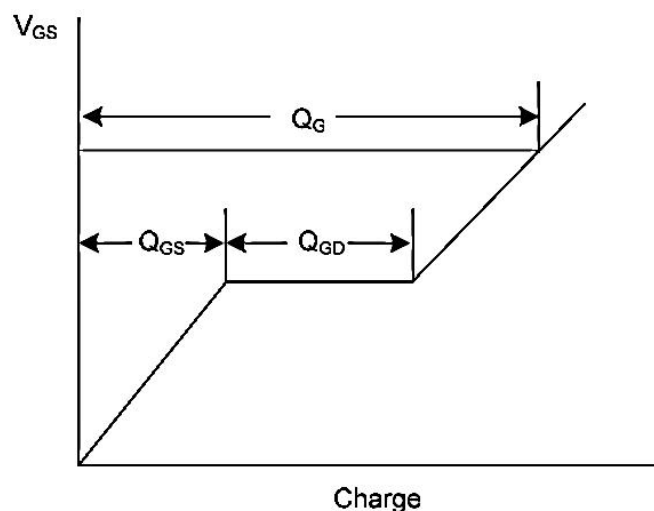
Switching Test Circuit



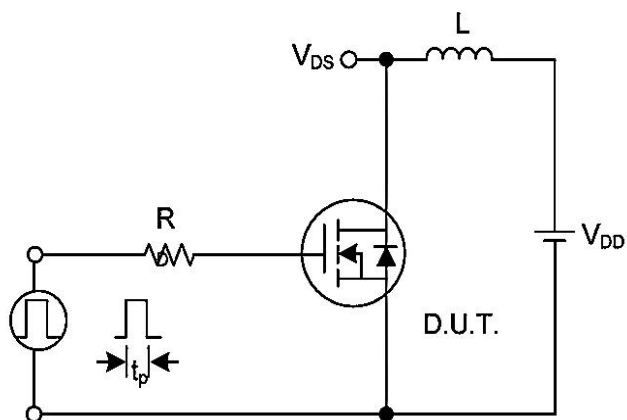
Switching Waveforms



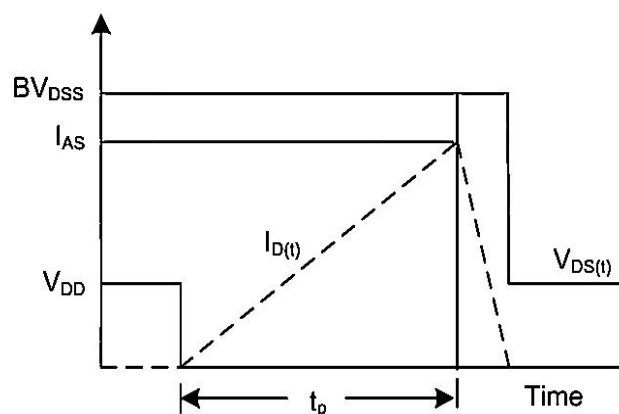
Gate Charge Test Circuit



Gate Charge Waveform

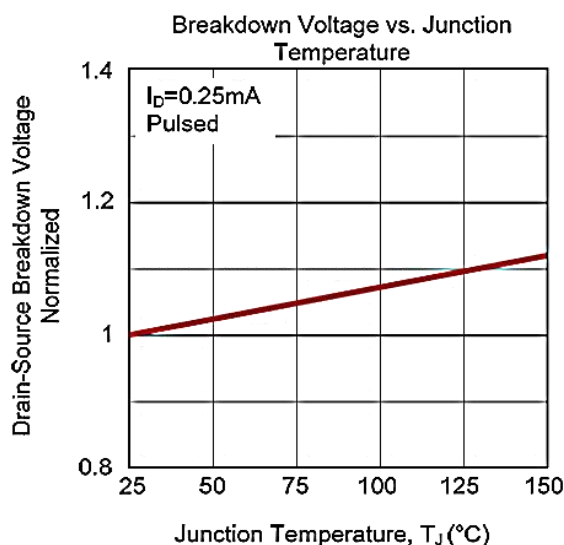
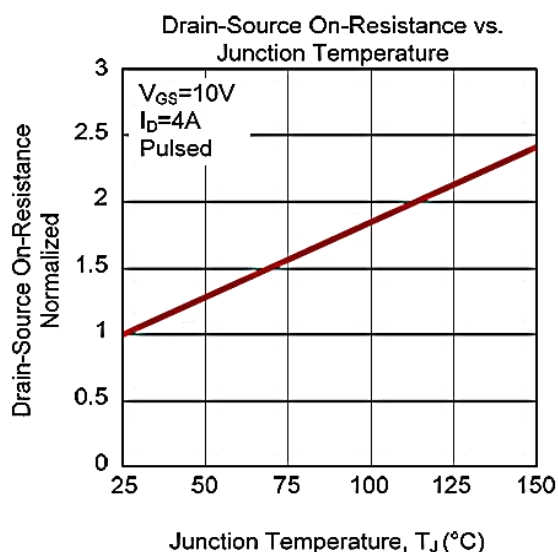
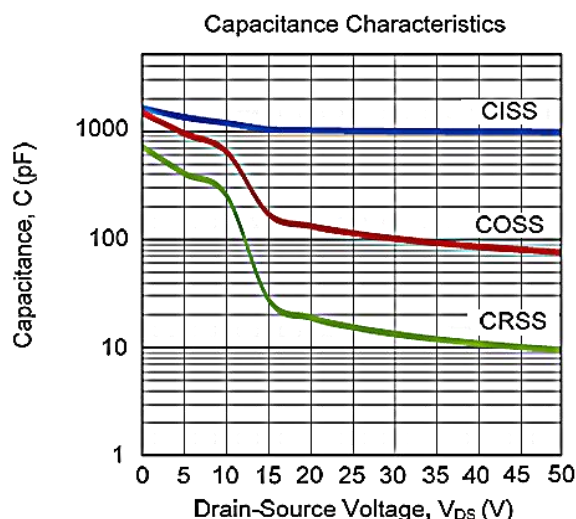
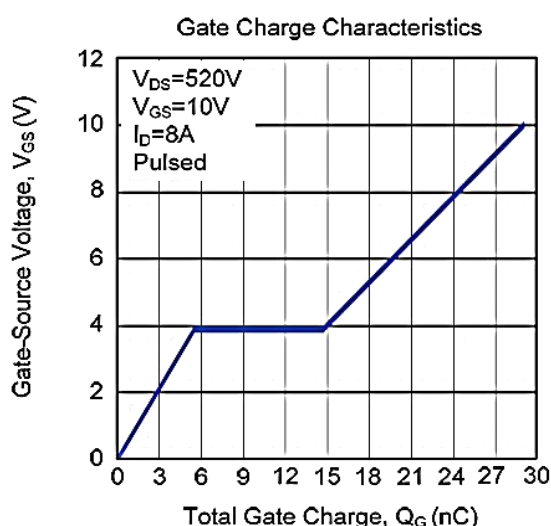
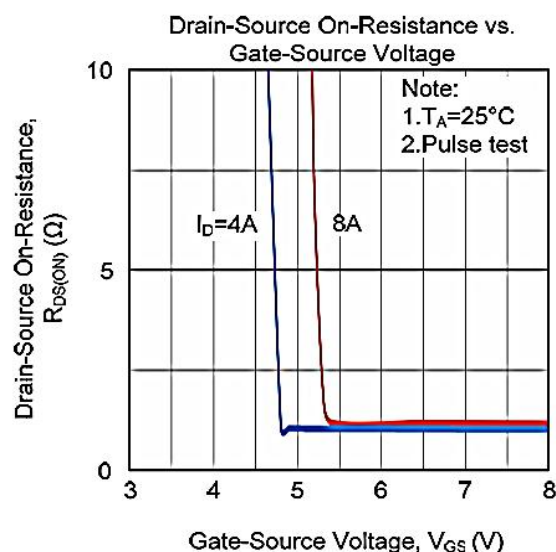
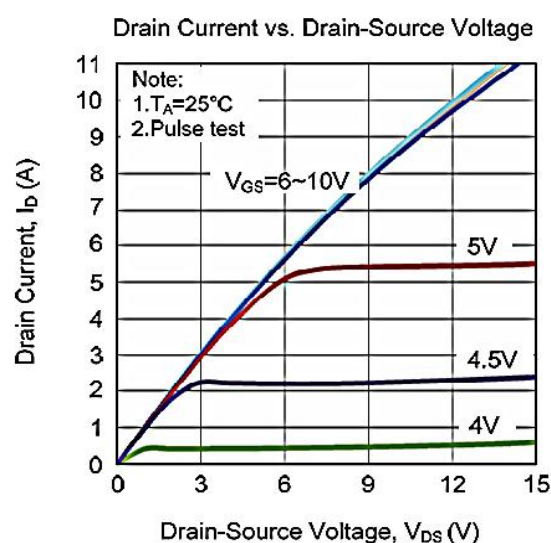


Unclamped Inductive Switching Test Circuit

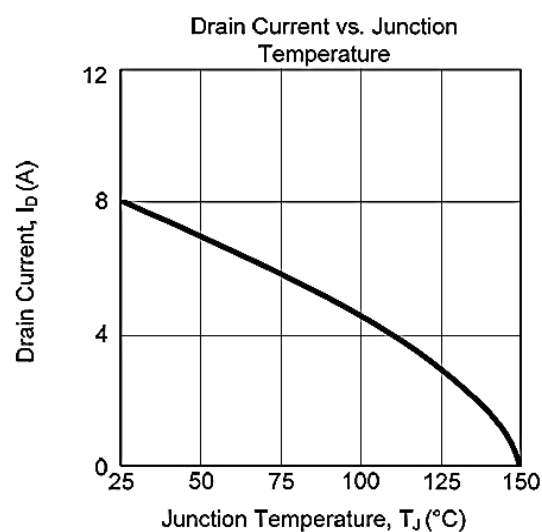
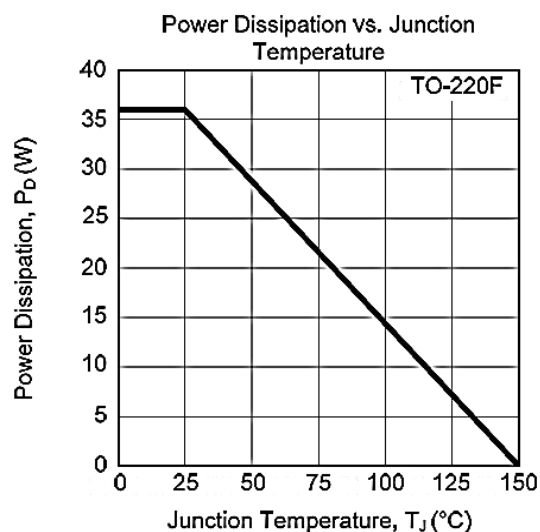
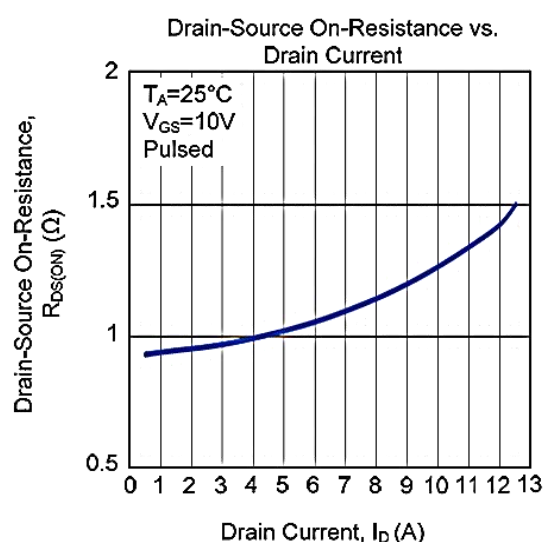
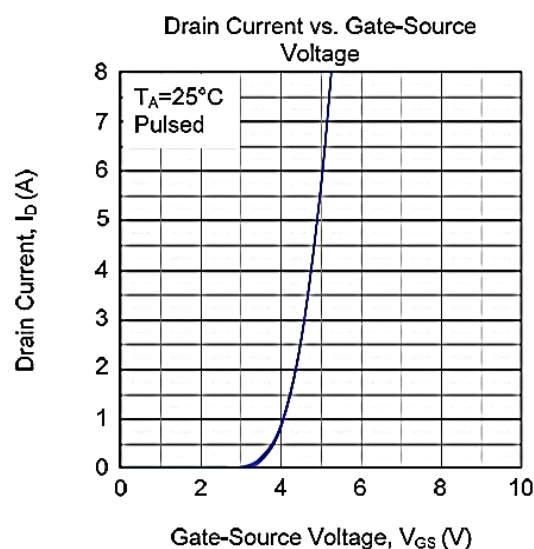
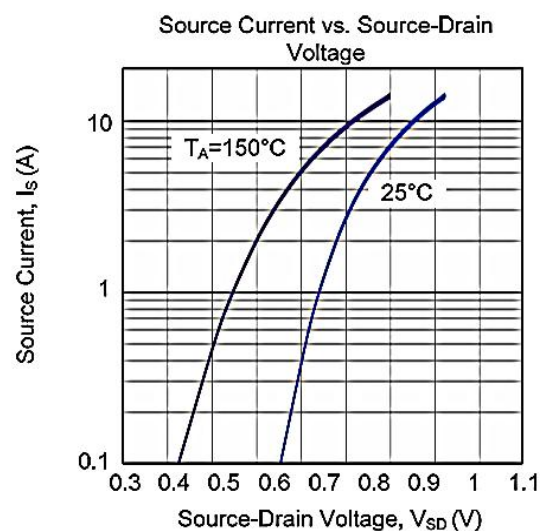
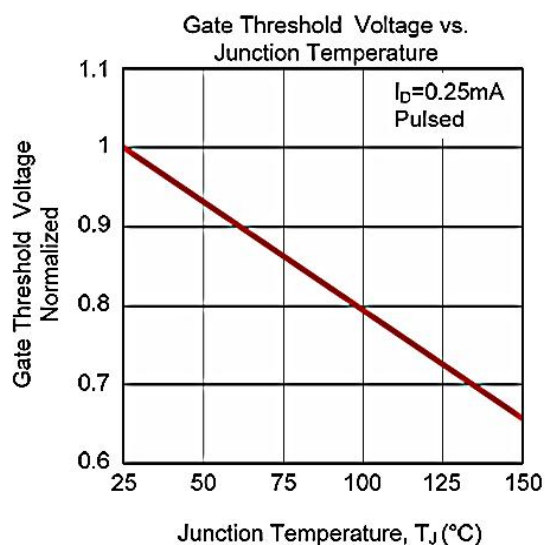


Unclamped Inductive Switching Waveforms

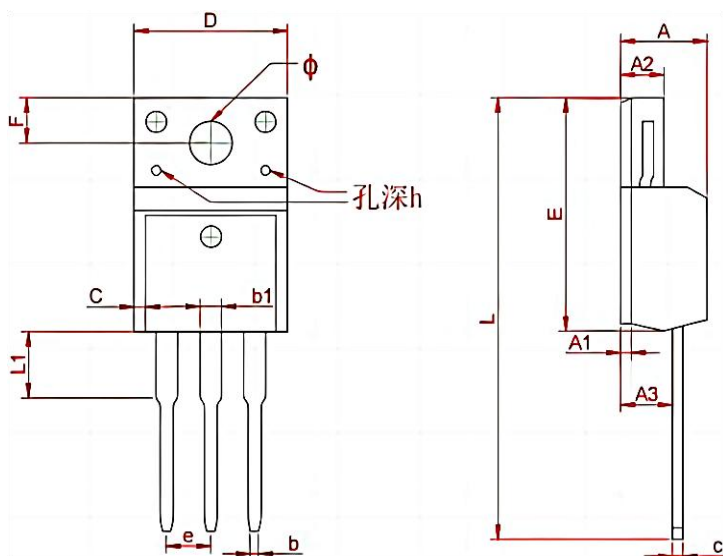
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Con.t)



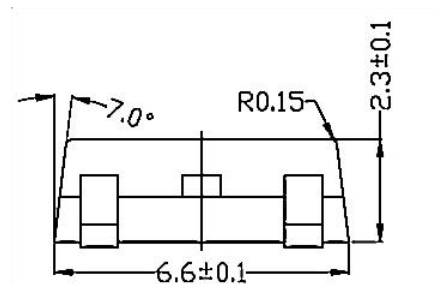
TO - 220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters	
	Min	Max
A	4.300	4.750
A1	0.7 REF	
A2	2.300	2.850
A3	2.500	2.900
b	0.380	0.420
b1	1.220	1.280
C	1.08	1.200
c	0.480	0.520
D	10.15	10.450
E	15.700	15.950
e	2.574 TYP	
F	3.470 REF	
y	3.200 REF	
h	0.000	0.800
L	28.780	28.900
L1	2.990	3.100

TO - 220F PACKING INFORMATION

Package version	Tube dimensions LxWxH (mm)	Per Tube (pcs)	Tube per box	Inner box dimensions LxWxH (mm)	PCS/ Inner box	Outer box dimensions LxWxH(mm)	PCS/ Outer box
TO-220F	530*32*7	50	20	580*155*50	1000	602*277*188	5000



Package version	Reel dimensions $\Phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
T0-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280