

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology
- ★ 100% EAS Guaranteed

Product Summary

RoHS

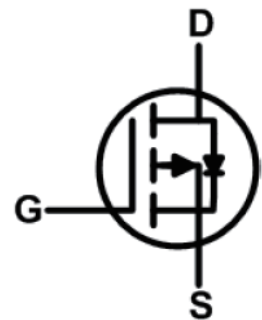
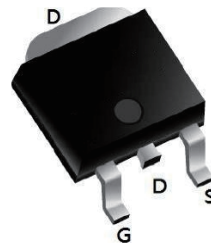
BVDSS	RDSON	ID
-60V	30mΩ	-30A

Description

The 30P06 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 30P06 meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V _{DS}	Drain-Source Voltage (V _{GS} =0V)	-60	V
V _{GS}	Gate-Source Voltage (V _{DS} =0V)	±20	V
I _D	Drain Current-Continuous(T _c =25°C)	-30	A
	Drain Current-Continuous(T _c =100°C)	-25.5	A
I _{DM (pluse)}	Drain Current-Continuous@ Current-Pulsed (Note 1)	-144	A
P _D	Maximum Power Dissipation(T _c =25°C)	79	W
	Maximum Power Dissipation(T _c =100°C)	39.5	W
EAS	Avalanche energy (Note 2)	196	mJ
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 To 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	-	1.9	°C/W

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_b=-250\mu A$	-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_b=-250\mu A$	-1	-1.8	-2.5	V
g_{FS}	Forward Transconductance	$V_{DS}=-5V, I_b=-15A$	-	35	-	S
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=-10V, I_b=-15A$	-	24	29	m Ω
		$V_{GS}=-4.5V, I_b=-10A$	-	30.4	39	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$	-	4026	-	pF
C_{oss}	Output Capacitance		-	134	-	pF
C_{rss}	Reverse Transfer Capacitance		-	98	-	pF
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=-10V, V_{DS}=-30V, R_L=1.5\Omega, R_{GEN}=3\Omega$	-	12.2	-	nS
t_r	Turn-on Rise Time		-	10	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	64	-	nS
t_f	Turn-Off Fall Time		-	14	-	nS
Q_g	Total Gate Charge	$V_{GS}=-10V, V_{DS}=-30V, I_b=-20A$	-	68	-	nC
Q_{gs}	Gate-Source Charge		-	10.5	-	nC
Q_{gd}	Gate-Drain Charge		-	13	-	nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)		-	-	-30	A
V_{SD}	Forward Voltage ^(Note 3)	$V_{GS}=0V, I_s=-15A$	-		-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-20A, di/dt=100A/\mu s$	-	26	-	ns
Q_{rr}	Reverse Recovery Charge	$I_F=-20A, di/dt=100A/\mu s$	-	29	-	nC

Note :

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.EAS condition: $T_J=25^\circ\text{C}, V_{DD}=40V, V_G=-10V, R_g=25\Omega, L=0.5mH$.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

P-Channel Typical Characteristics

Figure 1: Output Characteristics

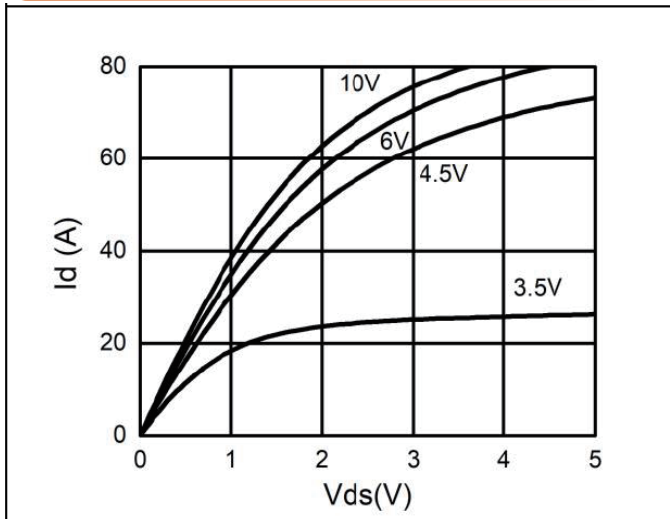


Figure 2: Transfer Characteristics

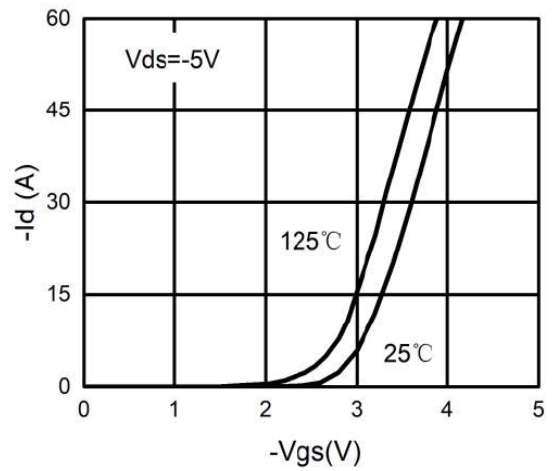


Figure 3: Power Dissipation

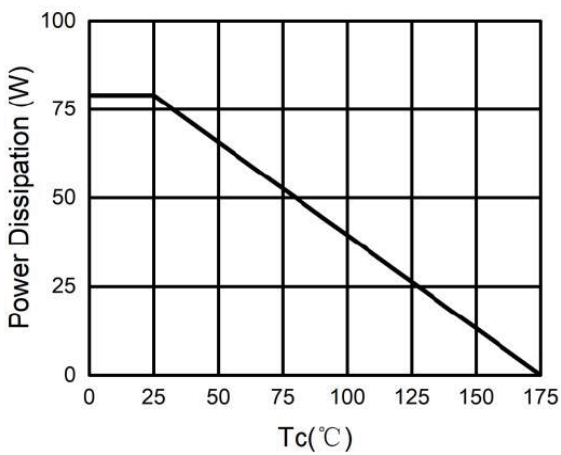


Figure 4: Drain Current

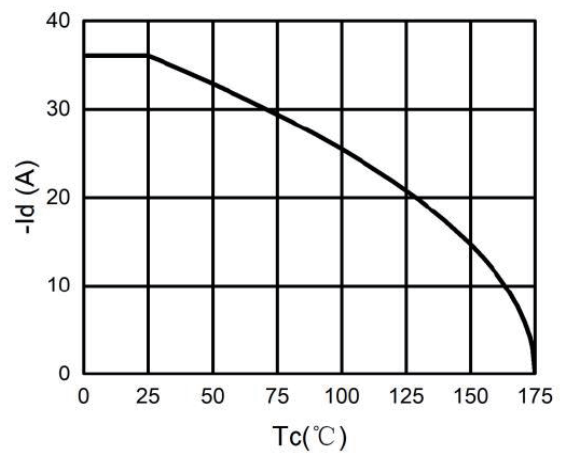


Figure 5: BVdss vs Junction Temperature

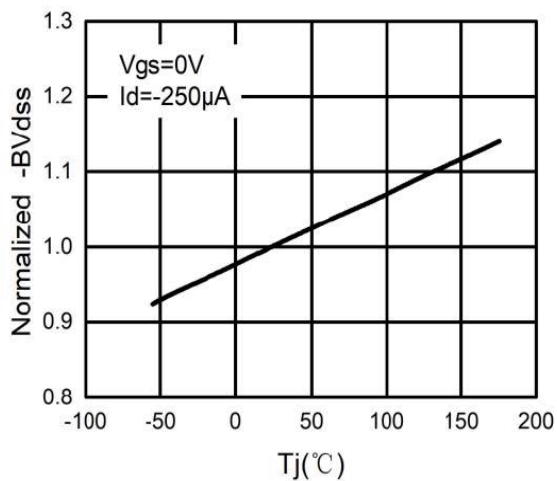
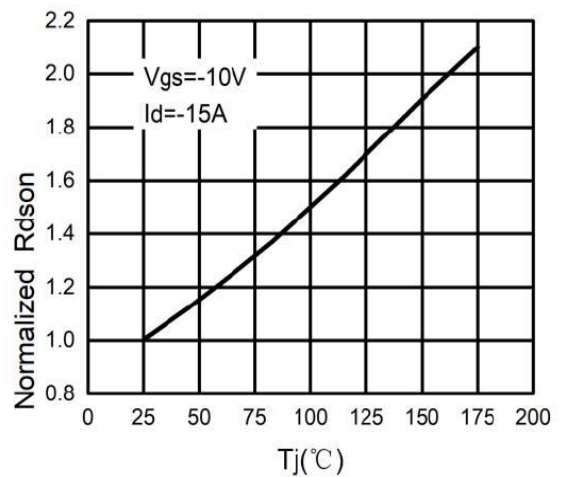


Figure 6: RDS(ON) vs Junction Temperature



Typical Performance Characteristics

Figure 7: Gate Charge Waveforms

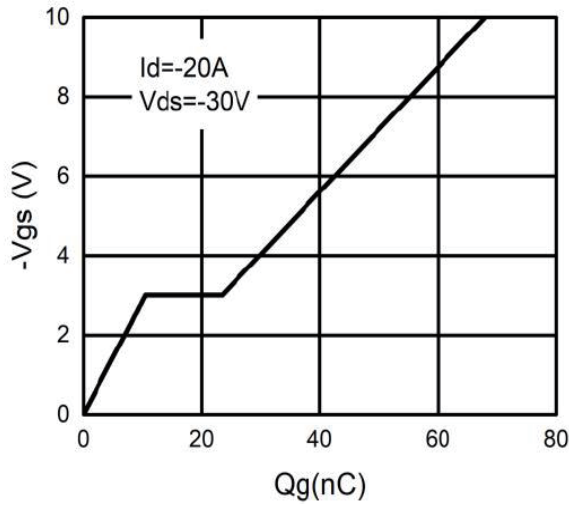


Figure 8: Capacitance

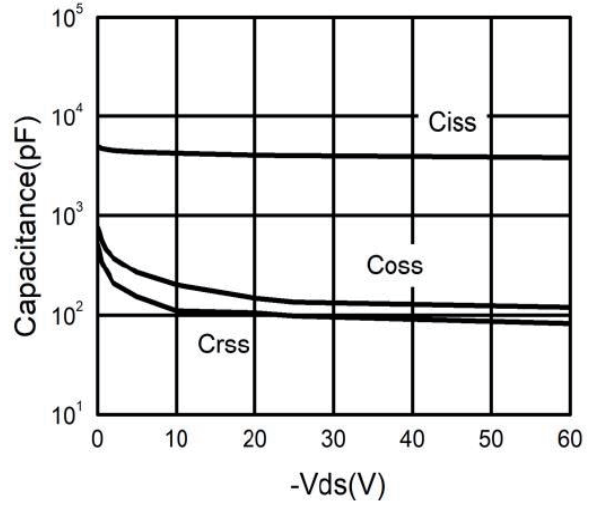


Figure 9: Body-Diode Characteristics

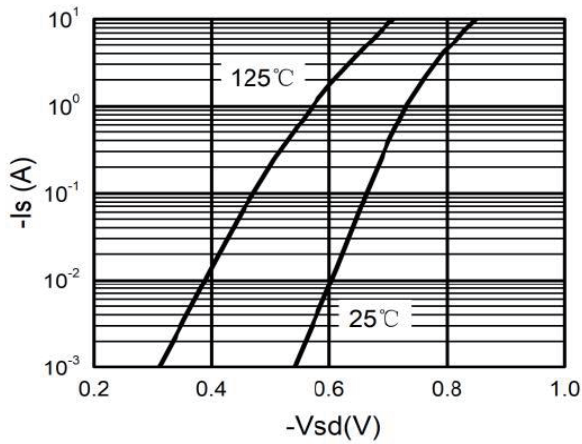
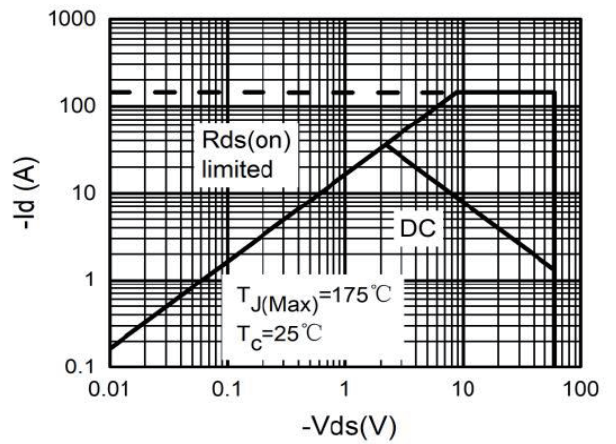
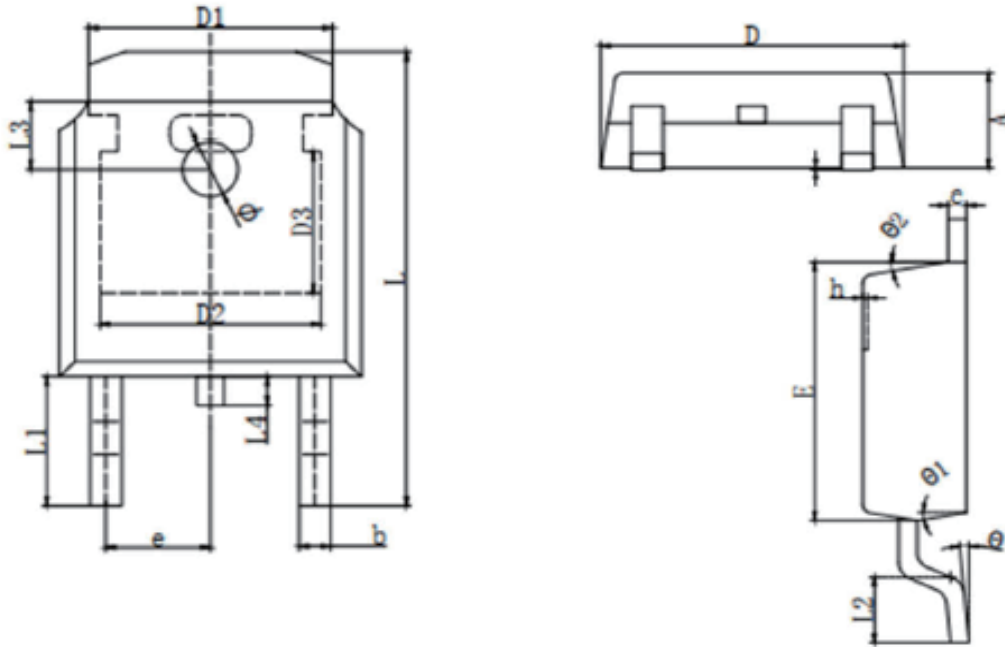


Figure 10: Maximum Safe Operating Area



TO-252 Package outline



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.838 REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600 REF	
D1	5.334 REF		L4	0.600	1.000
D2	4.826 REF		ϕ	1.100	1.300
D3	3.166 REF		θ	0°	8°
E	6.000	6.200	$\theta 1$	9° TYP2	
e	2.286 TYP		$\theta 2$	9° TYP	