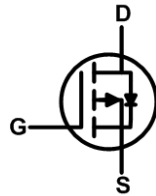
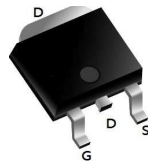


Description

The 30P03 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 30P03 meet the RoHS and Gree Product requirement 100% EAS guaranteed with full function reliability approved.

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

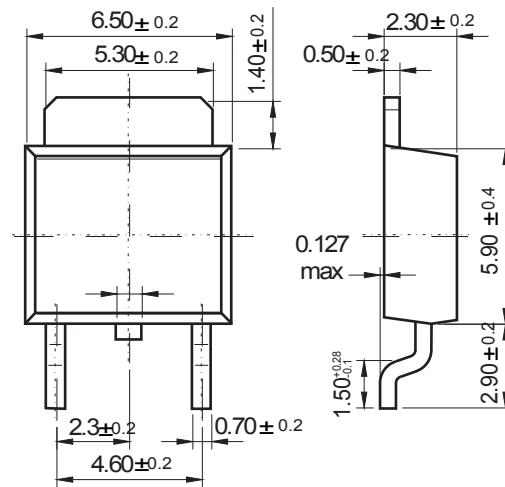


Product Summary

BVDSS	RDSON	ID
-30V	17mΩ	-35A

TO-252

Unit: mm



Dimensions in inches and (millimeters)

Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		10s	Steady State	
V _{DS}	Drain-Source Voltage	-30		V
V _{GS}	Gate-Source Voltage	±20		V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ -10V ¹	-35		A
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ -10V ¹	-17		A
I _{DM}	Pulsed Drain Current ²	-80		A
EAS	Single Pulse Avalanche Energy ³	35		mJ
I _{AS}	Avalanche Current	-10		A
P _D @T _A =25°C	Total Power Dissipation ⁴	4.0		W
T _{STG}	Storage Temperature Range	-55 to 150		°C
T _J	Operating Junction Temperature Range	-55 to 150		°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-Ambient ¹	---	32	°C/W

30P03

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} = 0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.5	-2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance Note3	V _{GS} =-10V, I _D =-9A	-	17	25	mΩ
		V _{GS} =-4.5V, I _D =-5A	-	27	38	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz	-	1200	-	pF
C _{oss}	Output Capacitance		-	155	-	pF
C _{rss}	Reverse Transfer Capacitance		-	139	-	pF
Q _g	Total Gate Charge	V _{DS} = -15V, I _D = -8A, V _{GS} = -10V	-	52	-	nC
Q _{gs}	Gate-Source Charge		-	9.8	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	8.3	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -15V, I _D = -1A, V _{GS} =-10V, R _{GEN} =6Ω	-	13	-	ns
t _r	Turn-on Rise Time		-	15	-	ns
t _{d(off)}	Turn-off Delay Time		-	198	-	ns
t _f	Turn-off Fall Time		-	98	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-35	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-80	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -9A	-	-0.8	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25°C, V_{DD}=-15V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-10A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

RATING AND CHARACTERISTIC CURVES (30P03)

Figure 1: Output Characteristics

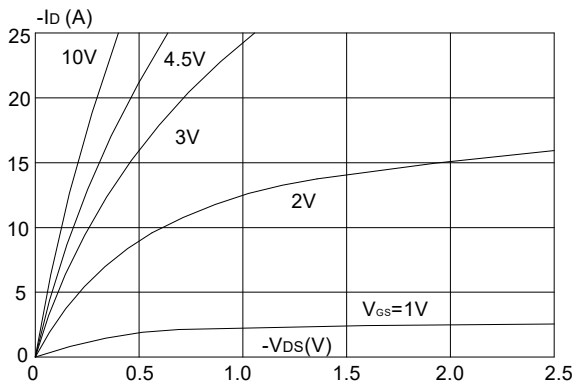


Figure 2: Typical Transfer Characteristics

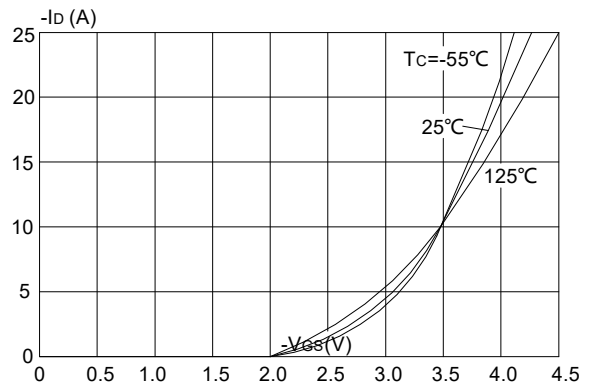


Figure 3: On-resistance vs. Drain Current

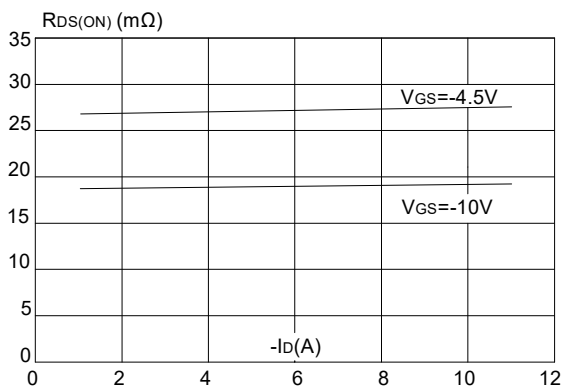


Figure 4: Body Diode Characteristics

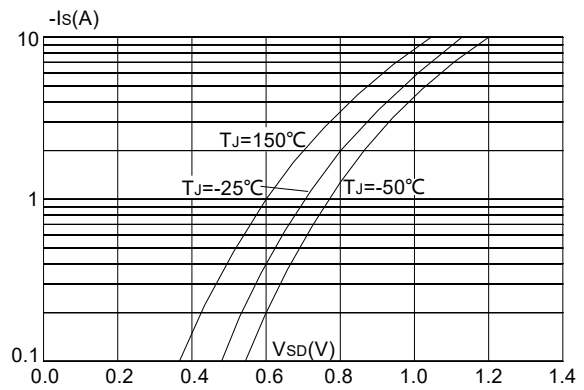


Figure 5: Gate Charge Characteristics

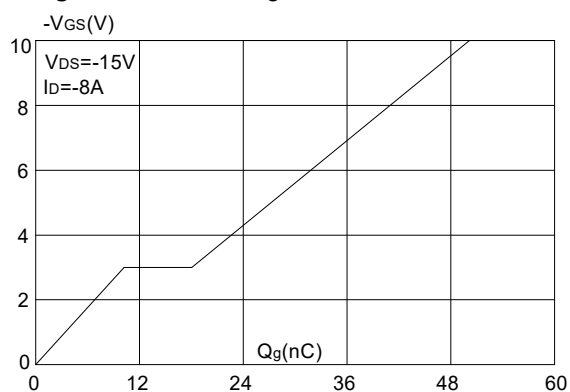
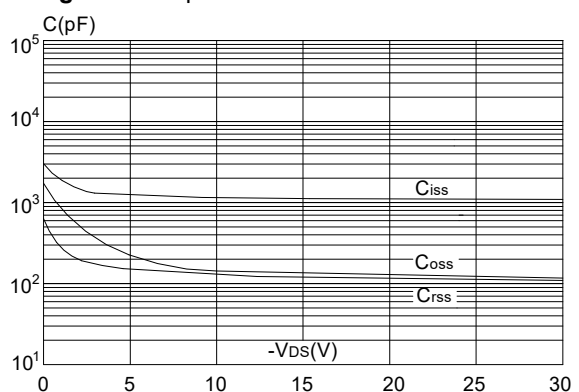


Figure 6: Capacitance Characteristics



RATING AND CHARACTERISTIC CURVES (30P03)

Figure 1: Output Characteristics

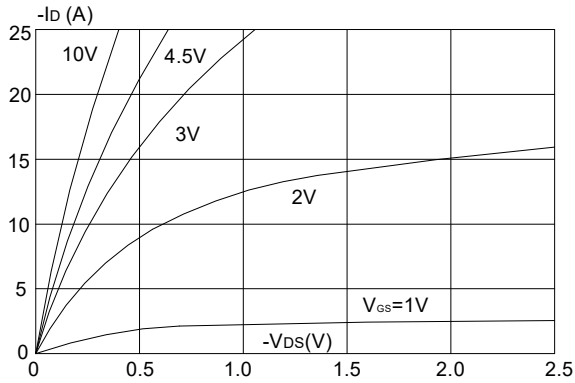


Figure 2: Typical Transfer Characteristics

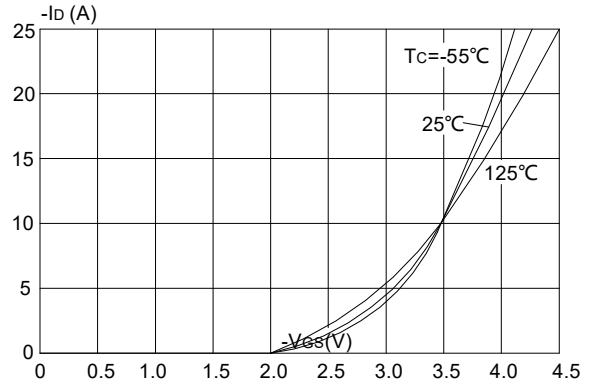


Figure 3: On-resistance vs. Drain Current

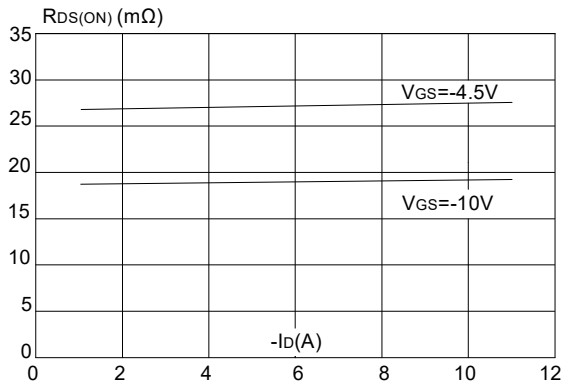


Figure 4: Body Diode Characteristics

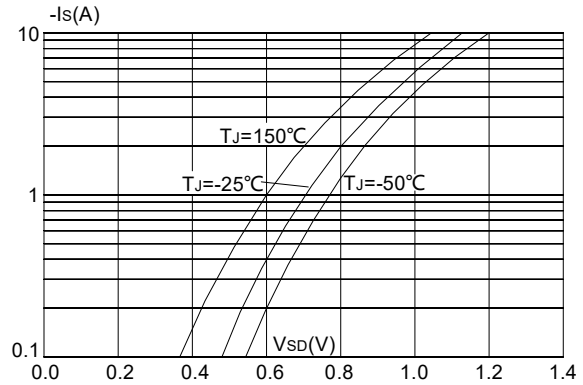


Figure 5: Gate Charge Characteristics

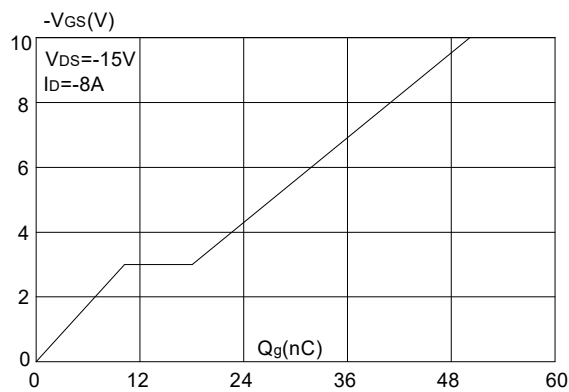
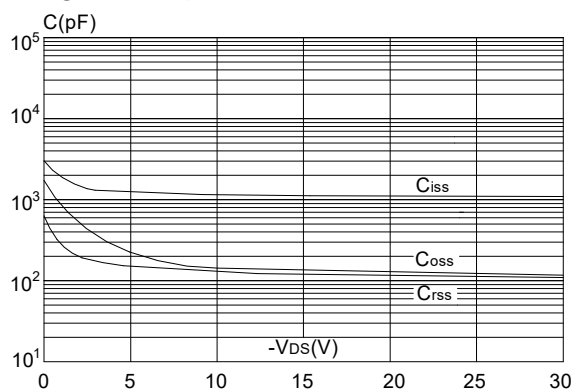
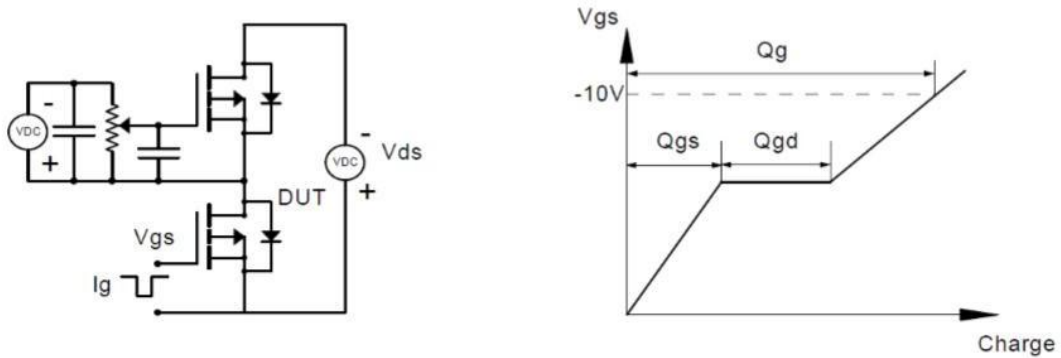


Figure 6: Capacitance Characteristics

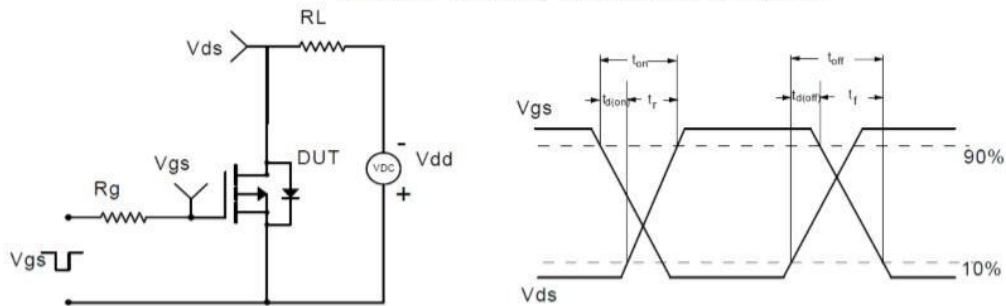


Test Circuit

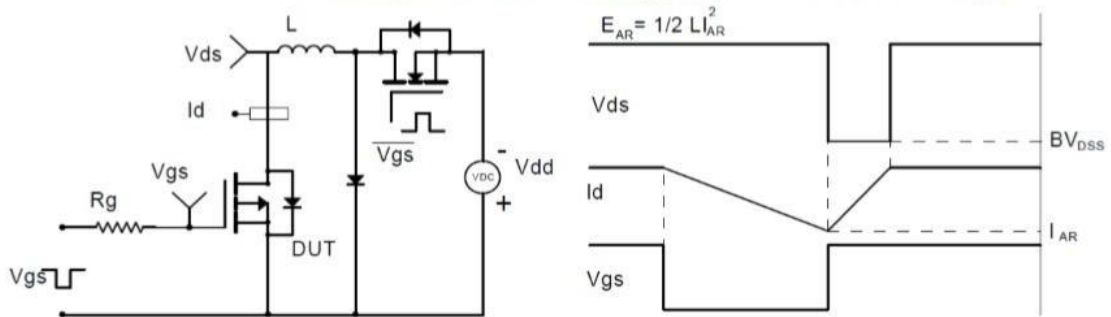
Gate Charge Test Circuit & Waveform



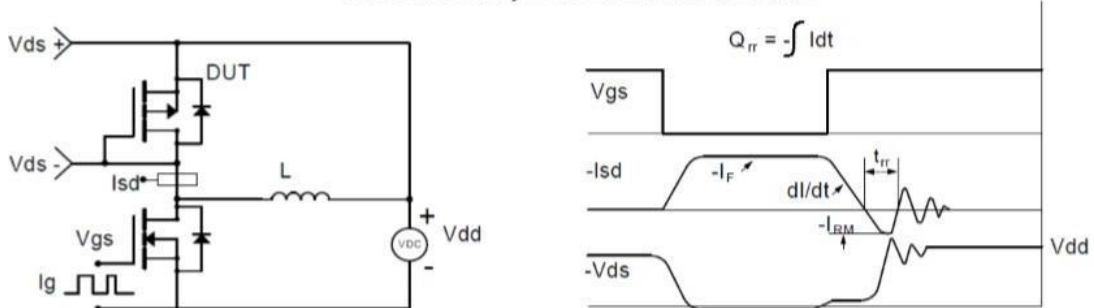
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



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