

Product Summary

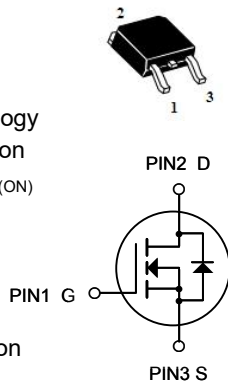
- V_{DS} 30V
- I_D 80A
- $R_{DS(ON)}$ TYP (at $V_{GS}=10V$) 4.0m Ω
- $R_{DS(ON)}$ TYP (at $V_{GS}=4.5V$) 6.2m Ω
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

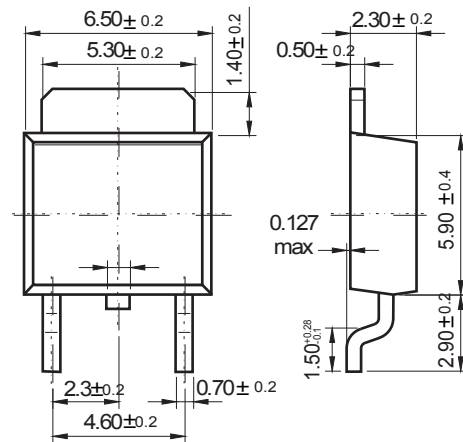
Applications

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application



TO-252

Unit: mm



Dimensions in inches and (millimeters)

ABSOLUTE MAXIMUM RATINGS (TC = 25 °C, unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	30	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
I_D	Drain Current-Continuous($T_c=25^\circ C$) (Note 1)	80	A
	Drain Current-Continuous($T_c=100^\circ C$)	55	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	230	A
P_D	Maximum Power Dissipation($T_c=25^\circ C$)	65	W
	Maximum Power Dissipation($T_c=100^\circ C$)	32.5	W
E_{AS}	Avalanche energy (Note 3)	90	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	$^\circ C$
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	2	$^\circ C/W$

80N03

ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{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-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.5	2.5	V
g _{FS}	Forward Transconductance	V _{DS} =5V,I _D =20A	10	20		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A		4.0	5.3	mΩ
		V _{GS} =5V, I _D =15A		6.5	8.5	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V,V _{GS} =0V, f=1.0MHz		2200		pF
C _{oss}	Output Capacitance			312		pF
C _{rss}	Reverse Transfer Capacitance			195		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V,f=1.0MHz		2		Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω,R _{GEN} =3Ω		7		nS
t _r	Turn-on Rise Time			22		nS
t _{d(off)}	Turn-Off Delay Time			30		nS
t _f	Turn-Off Fall Time			5		nS
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =25V, I _D =12A		47		nC
Q _{gs}	Gate-Source Charge			8		nC
Q _{gd}	Gate-Drain Charge			9		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)				80	A
V _{SD}	Forward on Voltage	V _{GS} =0V,I _S =20A			1.2	V

Notes 1. The maximum current rating is package limited.

Notes 2. Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3. EAS condition: T_j=25°C, V_{DD}=30V, V_G=10V, R_G=25Ω

RATING AND CHARACTERISTIC CURVES (80N03)

Figure 1. Output Characteristics

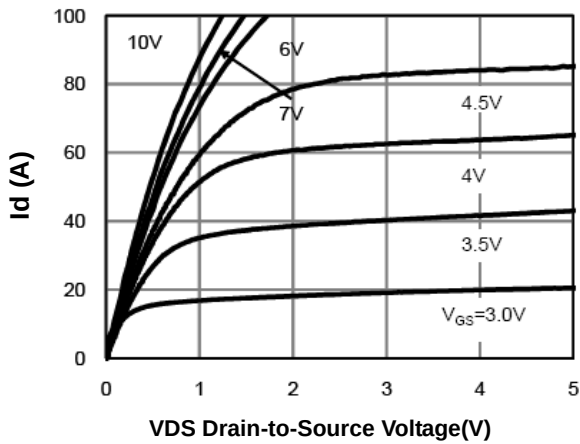


Figure 2. Transfer Characteristics

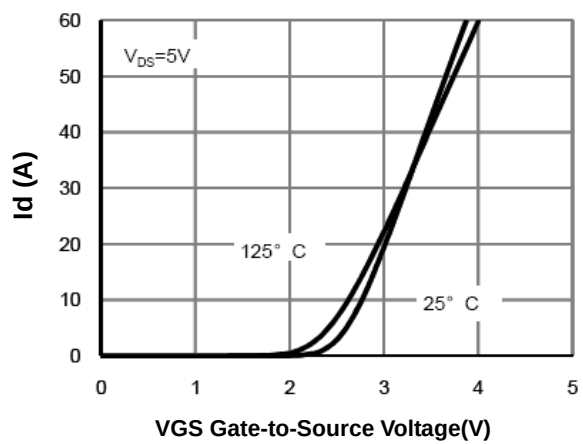


Figure 3. Max BV_{DSS} vs Junction Temperature

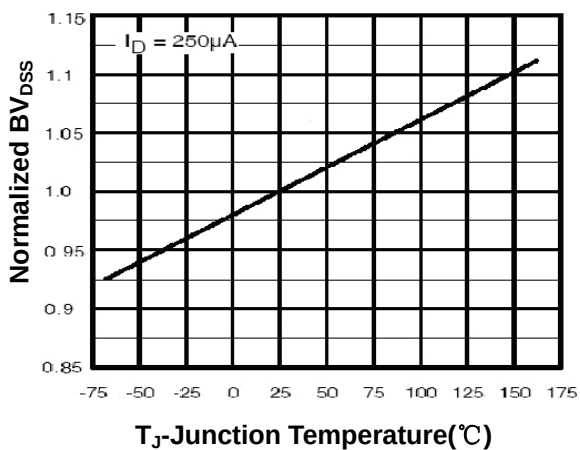


Figure 4. Drain Current

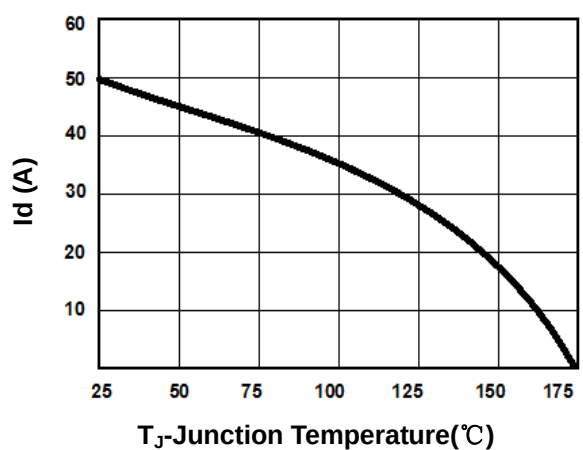


Figure 5. $V_{GS(th)}$ vs Junction Temperature

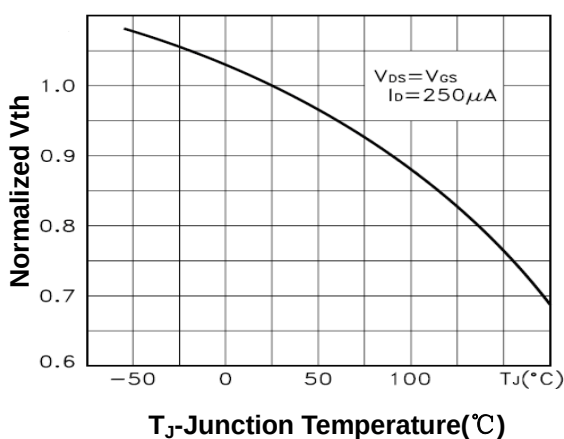
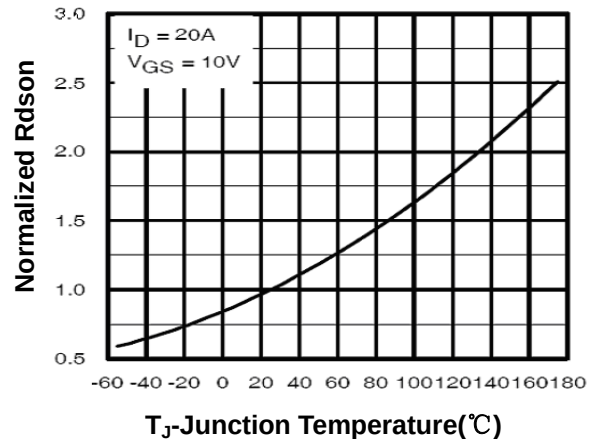


Figure 6. $R_{DS(on)}$ vs Junction Temperature



RATING AND CHARACTERISTIC CURVES (80N03)

Figure 7. Gate Charge Waveforms

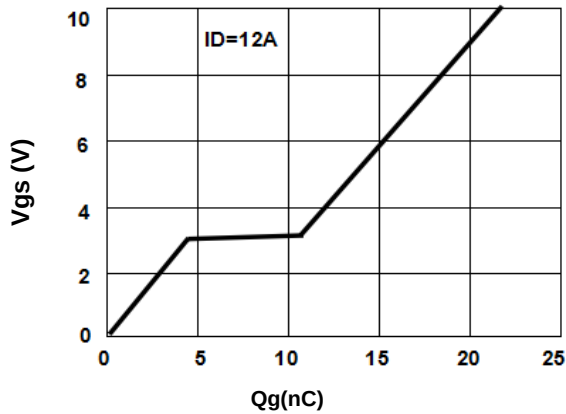


Figure 8. Capacitance

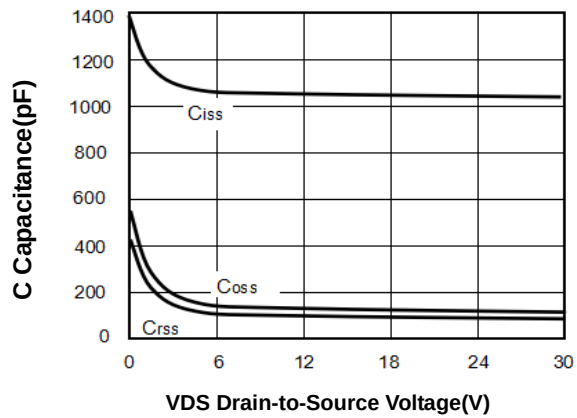


Figure 9. Body-Diode Characteristics

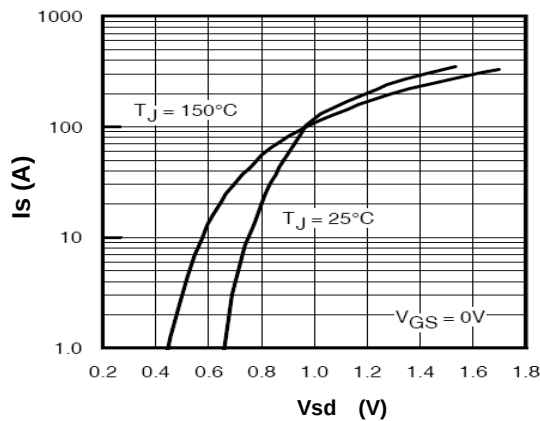


Figure 10. Maximum Safe Operating Area

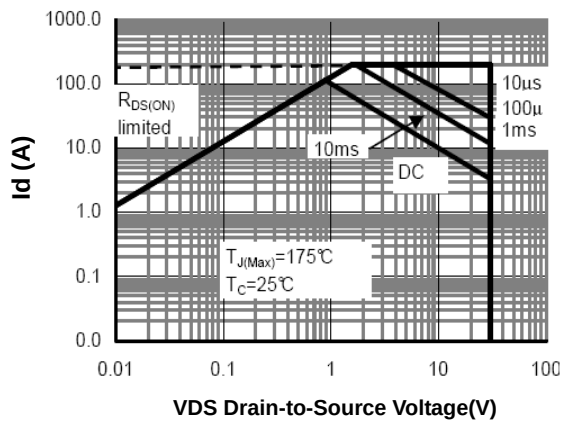


Figure 11. Normalized Maximum Transient Thermal Impedance

