

### General Description

The 40N25 uses advanced planar stripe DMOS technology and design to provide excellent RDS(ON).

These devices are well suited for high efficiency switched mode power supplies, active power factor correction based on half bridge topology.

### Features

- Fast switching
- 100% avalanche tested
- Improve dv/dt capability
- RoHS compliant

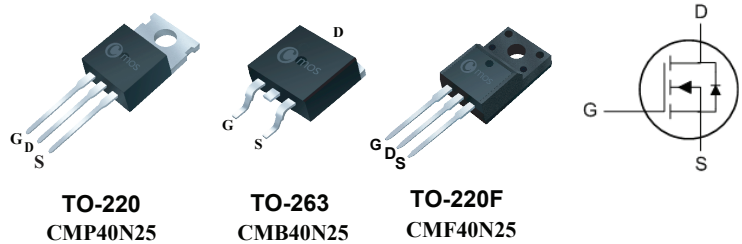
### Product Summary

BVDSS	RDSON	ID
250V	90mΩ	40A

### Applications

- Uninterruptible power supplies
- DC/DC converter
- DC/AC inverter

### TO-220/263/220F Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	220/263	220F	Units
$V_{DS}$	Drain-Source Voltage	250		V
$V_{GS}$	Gate-Source Voltage	±30		V
$I_D@T_C=25^\circ C$	Continuous Drain Current	40	40	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	25	25	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	160	160	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	684		mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	160	40	W
$T_{STG}$	Storage Temperature Range	-55 to 150		°C
$T_J$	Operating Junction Temperature Range	-55 to 150		°C

### Thermal Data

Symbol	Parameter	220/263	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	0.78	3	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	250	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$	---	---	90	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	2	---	4	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=250V, V_{GS}=0V$	---	---	10	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=15V, I_D=20A$	---	26	---	S
$Q_g$	Total Gate Charge	$I_D=20A$	---	62	---	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=125V$	---	16	---	
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=10V$	---	18	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=125V$ $I_D=20A$ $R_G=25\Omega$	---	42	---	ns
$T_r$	Rise Time		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time		---	155	---	
$T_f$	Fall Time		---	32	---	
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	---	3100	---	pF
$C_{oss}$	Output Capacitance		---	350	---	
$C_{rss}$	Reverse Transfer Capacitance		---	40	---	

### Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	40	A
$I_{SM}$	Pulsed Source Current		---	---	160	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=20A, T_J=25^{\circ}\text{C}$	---	---	1.4	V

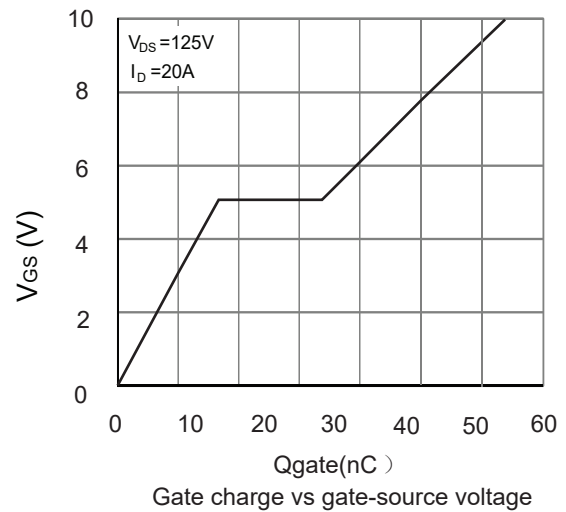
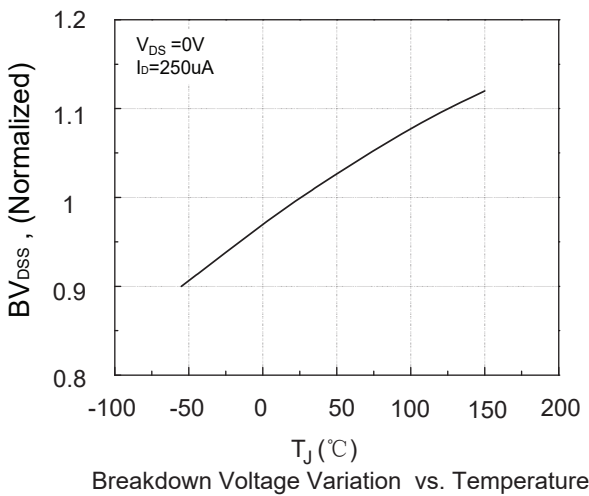
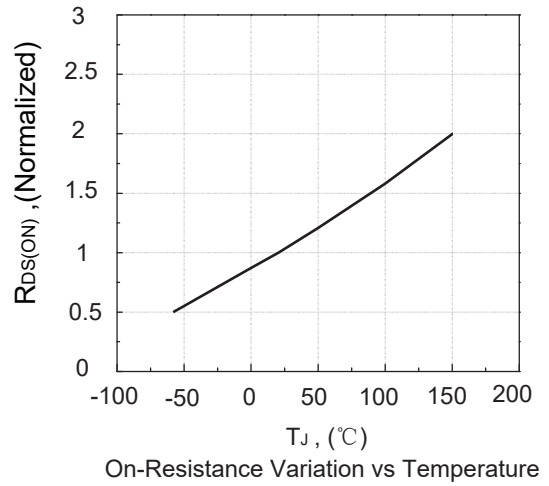
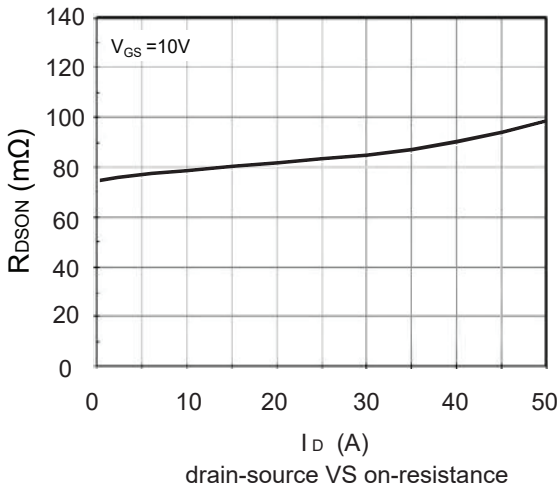
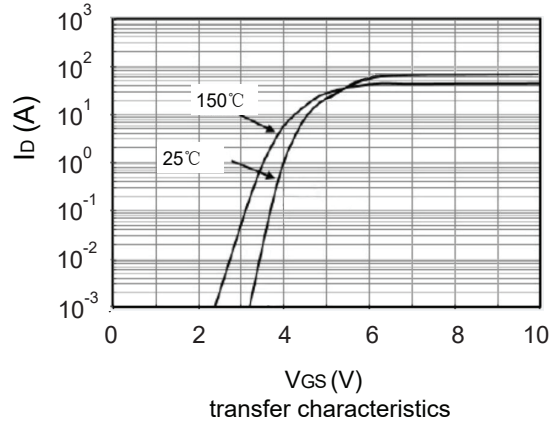
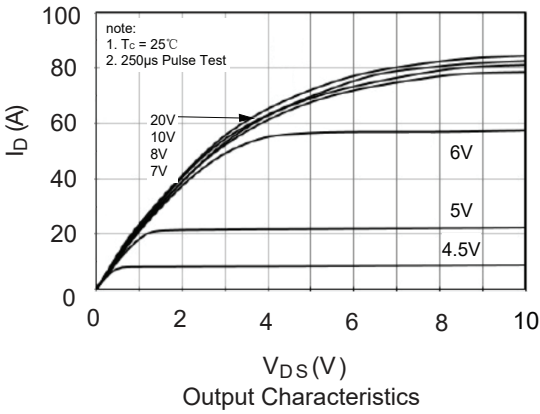
Note :

1.Repetitive rating; pulse width limited by maximum junction temperature.

2.The test condition is  $V_{DD}=50V, V_{GS}=10V, L=1mH, I_{AS}=37A$ .

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Typical Characteristics



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