

N+P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	115mA
V_{DSS}	60V
$R_{DS(on)-typ}(@V_{GS}=5.0V)$	$< 7.5\Omega$ (Typ: 3.2Ω)
I_D	-130mA
V_{DSS}	-50V
$R_{DS(on)-typ}(@V_{GS}=-5.0V)$	$< 10\Omega$

FEATURES

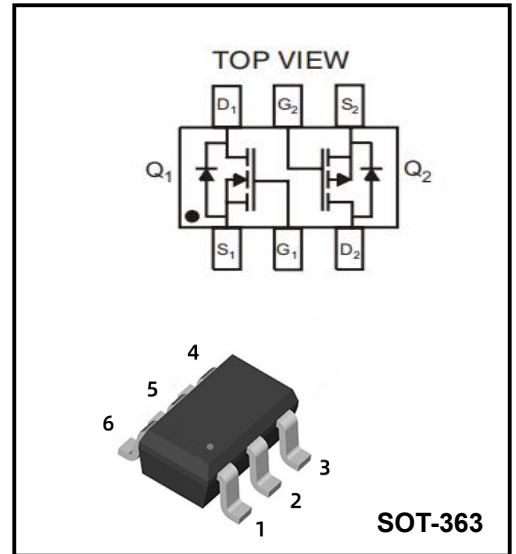
- ♦ Low On-Resistance: $R_{DS(ON)}$
- ♦ Low Gate Threshold Voltage
- ♦ Low Input Capacitance
- ♦ Fast Switching Speed
- ♦ Low Input/Output Leakage
- ♦ Complementary Pair
- ♦ Also Available in Lead Free Version

MECHANICAL DATA

- ♦ Case: SOT-363
- ♦ Case material - UL Flammability Rating Classification 94V-0
- ♦ Moisture sensitivity: Level 1 per J-STD-020A
- ♦ Terminals: Solderable per MIL-STD-202, Method 208
- ♦ Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 4, on Page 5
- ♦ Terminal Connections: See Diagram
- ♦ Pb-Free package is available

Maximum Ratings at $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics		Symbols	Value		Units
			N-Ch	P-Ch	
Drain-Source Voltage		V_{DS}	60	-50	V
Gate - Source Voltage		V_{GS}	± 20	± 20	V
Drain Current	Continuous	I_D	115	-130	mA
	Continuous@100°C		73	-	
	Pulsed		800	-	
Total Power Dissipation@ $T_A=25^\circ\text{C}$		P_D	200	200	mW
Storage Temperature Range		T_{STG}	-55 to +150	-55 to +150	°C
Operating Junction Temperature Range		T_J	-55 to +150	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹		$R_{\theta JA}$	625	625	°C/W



Marking Code	
BSS8402PN	KNP

N-Channel Electrical Characteristics ($T_A=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=10\mu A$	BV_{DSS}	60	70	-	V
Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	I_{DSS}	-	-	1.0	μA
	$V_{DS}=60V, V_{GS}=0V, T_J=125^{\circ}\text{C}$		-	-	500	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 10	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	-	2.5	V
Static Drain-Source On-Resistance ²	$V_{GS}=5.0V, I_D=0.05A, T_J=25^{\circ}\text{C}$	$R_{DS(ON)}$	-	3.2	7.5	Ω
	$V_{GS}=10V, I_D=0.5A, T_J=125^{\circ}\text{C}$		-	4.4	13.5	Ω
On-State Drain Current	$V_{GS}=10V, I_D=7.5V$	$I_{D(ON)}$	0.5	1.0	-	A
Forward Transconductance	$V_{DS}=10V, I_D=0.2A$	g_{fs}	80	-	-	mS
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$	C_{iss}	-	22	50	pF
Output Capacitance		C_{oss}	-	11	25	
Reverse Transfer Capacitance		C_{rss}	-	2.0	5.0	
Turn-On Delay Time	$V_{DD}=30V, I_D=0.2A,$ $R_L=150\Omega, V_{GS}=10V,$ $R_{GEN}=25\Omega$	$t_{d(on)}$	-	7.0	20	ns
Turn-Off Delay Time		$t_{d(off)}$	-	11	20	ns

P-Channel Electrical Characteristics ($T_A=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-50	-	-	V
Drain-Source Leakage Current	$V_{DS}=-50V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	I_{DSS}	-	-	-15	μA
	$V_{DS}=-50V, V_{GS}=0V, T_J=125^{\circ}\text{C}$		-	-	-60	μA
	$V_{DS}=-25V, V_{GS}=0V, T_J=25^{\circ}\text{C}$		-	-	-100	μA
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 50	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-1mA$	$V_{GS(th)}$	-0.8	-	-2.0	V
Static Drain-Source On-Resistance	$V_{GS}=-5V, I_D=-0.1A$	$R_{DS(ON)}$	-	-	10	Ω
Forward Transconductance	$V_{DS}=-25V, I_D=-0.1A$	g_{fs}	0.05	-	-	S
Input Capacitance	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$	C_{iss}	-	-	45	pF
Output Capacitance		C_{oss}	-	-	25	
Reverse Transfer Capacitance		C_{rss}	-	-	12	
Turn-on delay time	$V_{DD}=-30V, I_D=-0.27A,$ $R_{GEN}=50\Omega, V_{GS}=-10V$	$t_{d(on)}$	-	10	-	ns
Turn-Off Delay Time		$t_{d(off)}$	-	18	-	

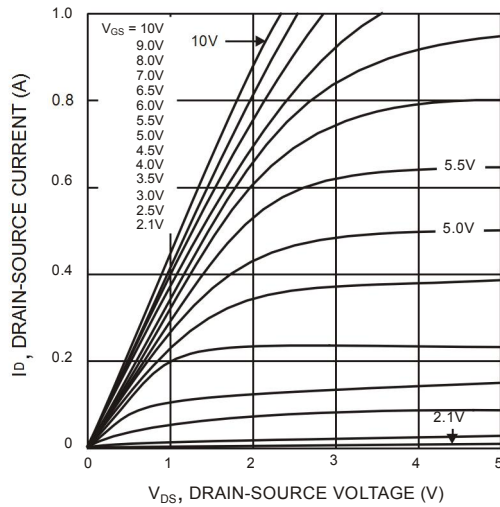


Fig. 1 On-Region Characteristics

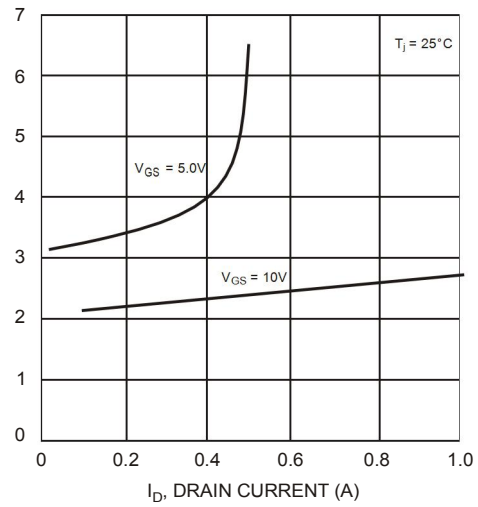


Fig. 2 On-Resistance vs Drain Current

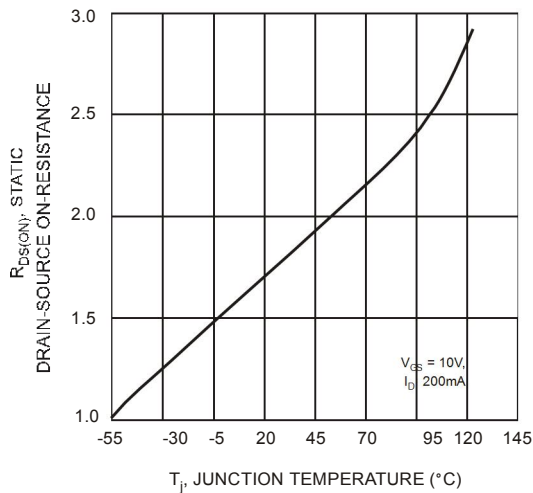


Fig. 3 On-Resistance vs Junction Temperature

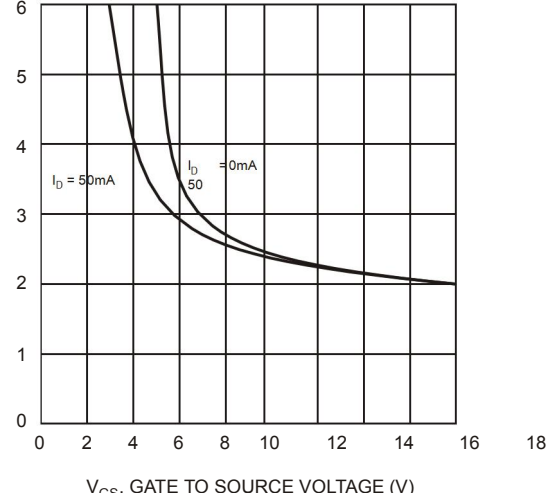


Fig. 4 On-Resistance vs. Gate-Source Voltage

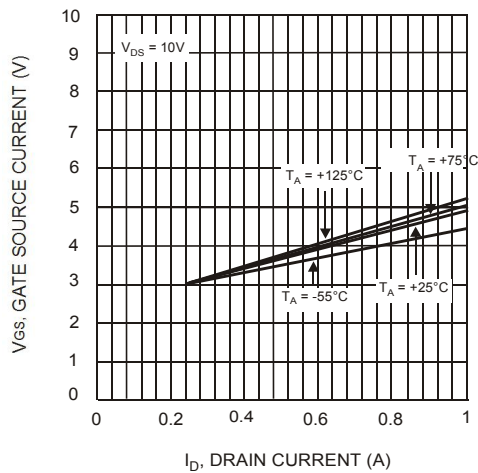


Fig. 5 Typical Transfer Characteristics

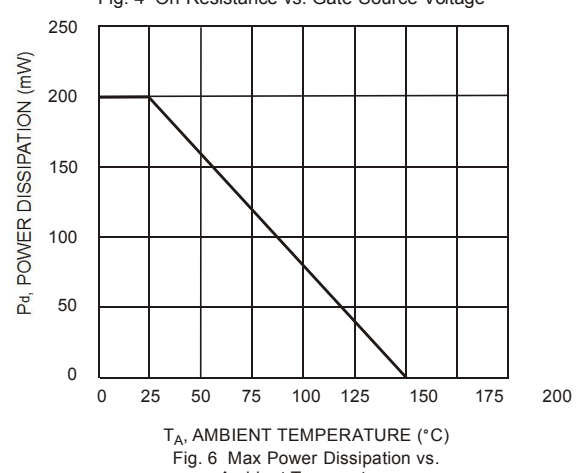
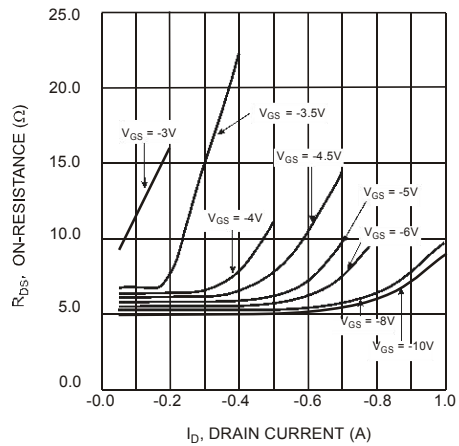
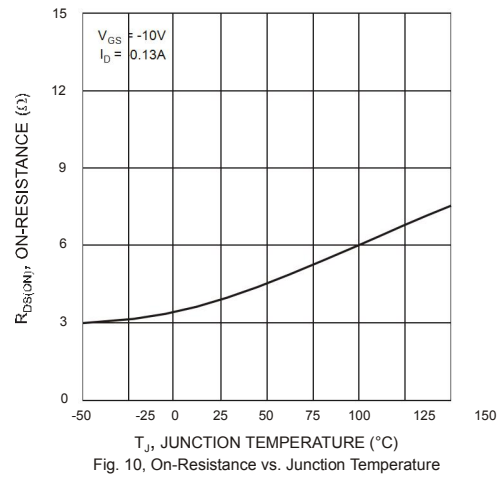
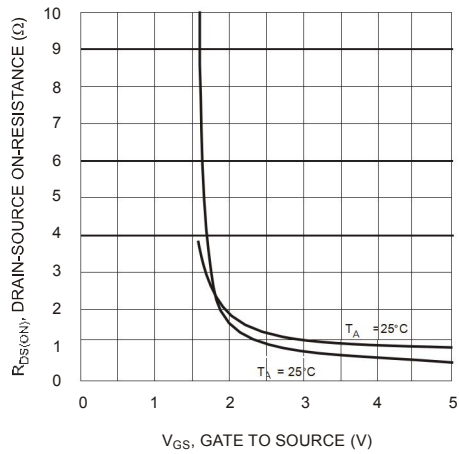
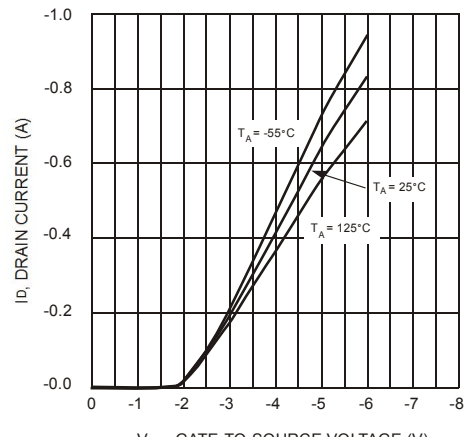
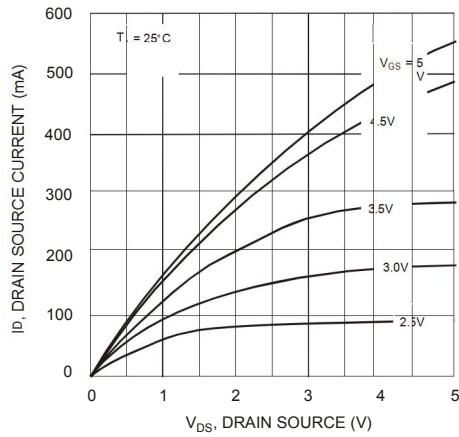


Fig. 6 Max Power Dissipation vs. Ambient Temperature



Ordering information

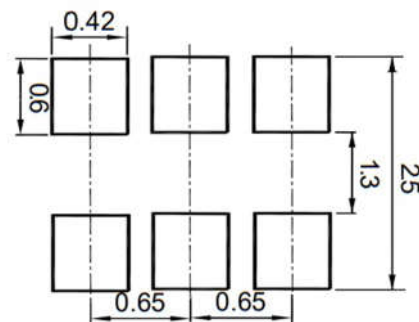
Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

Package Dimensions

SOT-363

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

The recommended mounting pad size



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