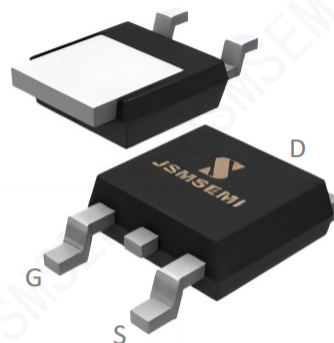


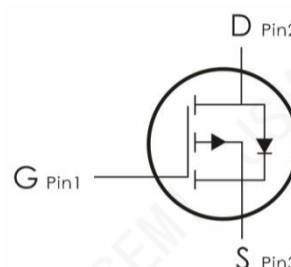
■ DESCRIPTION

The SHY19P03D is P channel enhancement mode power effect transistor which is produced using high cell density advanced trench technology. The high density process is especially able to minize on-state resistance. These devices are. especially suited for low voltage application power management DC-DC converters.



■ FEATURE

- ◆ $R_{DS(ON)} = 5.0m\Omega (typ.) @ V_{GS} = -10V$
- ◆ $R_{DS(ON)} = 6.0m\Omega (typ.) @ V_{GS} = -4.5V$
- ◆ Super high design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ TO252 package design
- ◆ 100% UIS Tested
- ◆ 100% Rg tested



■ APPLICATIONS

- ◆ Power Management
- ◆ DC/DC Converter
- ◆ Load Switch

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless otherwise noted)

Symbol	Parameter	Max.	Units
VDS	Drain-to-Source Voltage	-30	V
VGS	Gate-to-Source Voltage	± 25	
ID @ TA = 25°C	Continuous Drain Current, VGS @ 10V	-15	A
ID @ TA = 70°C	Continuous Drain Current, VGS @ 10V	-12	
ID @ TC(Bottom) = 25°C	Continuous Drain Current, VGS @ 10V	-80	
ID @ TC(Bottom) = 100°C	Continuous Drain Current, VGS @ 10V	-55	
ID @ TC = 25°C	Continuous Drain Current, VGS @ 10V (Package Limited)	-70	
IDM	Pulsed Drain Current	-320	
PD @TA = 25°C	Power Dissipation	2.5	W
PD @TC(Bottom) = 25°C	Power Dissipation	90	
	Linear Derating Factor	0.03	W/°C
TJ TSTG	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
 Absolute maximum ratings are stress rating only and functional device operation is not implied

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250uA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250uA	-1.0		-2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±25V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0			-1	uA
		V _{DS} =-24V, V _{GS} =0 T _J =85°C			-5	
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =-10V, I _D = -20 A		5.0	6.0	mΩ
		V _{GS} = -4.5V, I _D = -20 A		6.0	8.0	
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S = -1 A, V _{GS} =0V		0.7	1.3	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} = -15V V _{GS} = -10V I _D =-20 A		53		nC
Q _{gs}	Gate-Source Charge			23		
Q _{gd}	Gate-Drain Charge			13		
C _{iss}	Input Capacitance	V _{DS} = -15V V _{GS} =0V f=1MHz		2886		pF
C _{oss}	Output Capacitance			640		
C _{rss}	Reverse Transfer Capacitance			440		
T _{d(on)}	Turn-On Time	V _{DS} = -15V R _L =0.75Ω V _{GEN} =-10V R _G =3.0Ω		19		nS
T _r				15		
T _{d(off)}	Turn-Off Time			52		
T _f				17		

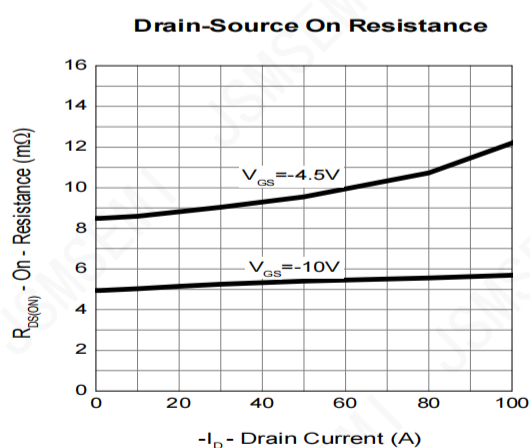
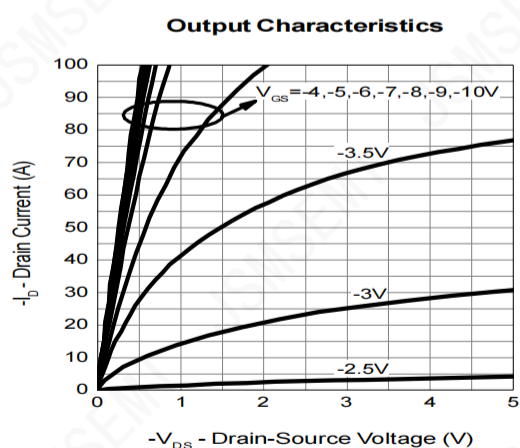
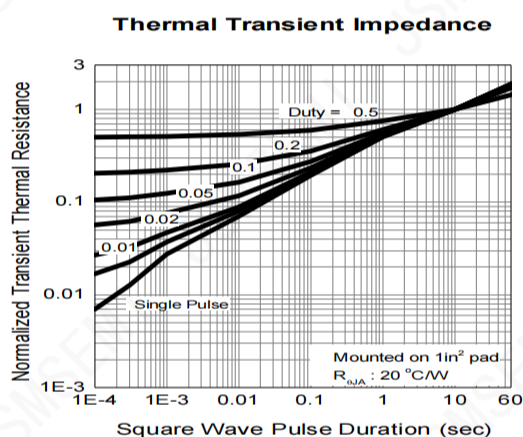
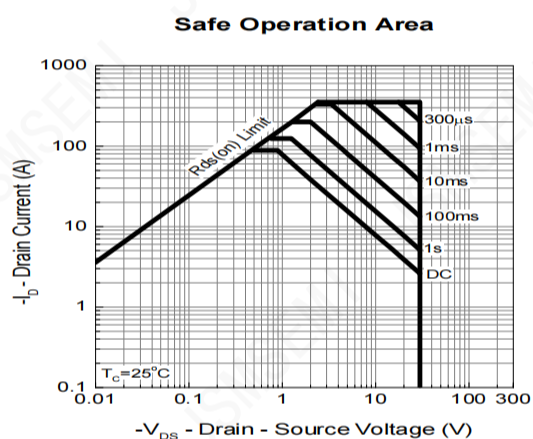
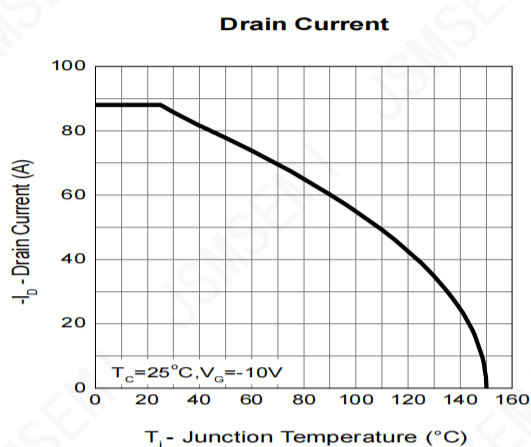
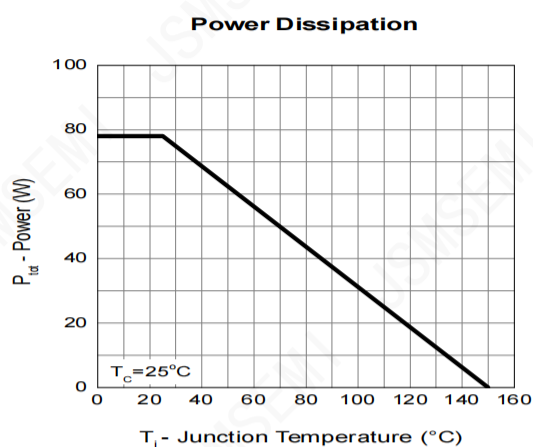
Note: 1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

2. Static parameters are based on package level with recommended wire bonding

Ordering Information

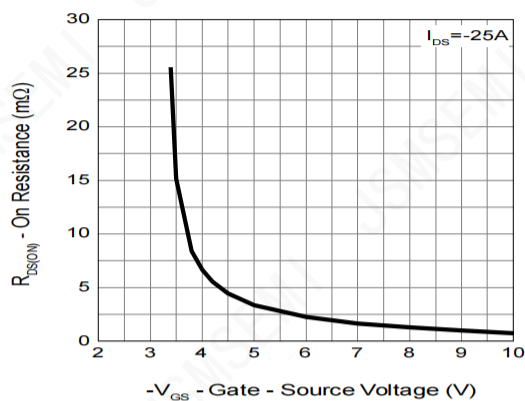
Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
SHY19P03D	TO-252	SHY19P03D	-55 to 150 $^{\circ}\text{C}$	1	T&R, 2500	RoHS

■ **TYPICAL CHARACTERISTICS** (25°C Unless Note)

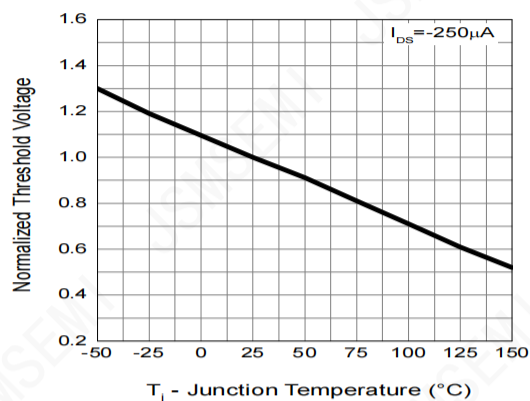


■ **TYPICAL CHARACTERISTICS** (continuous)

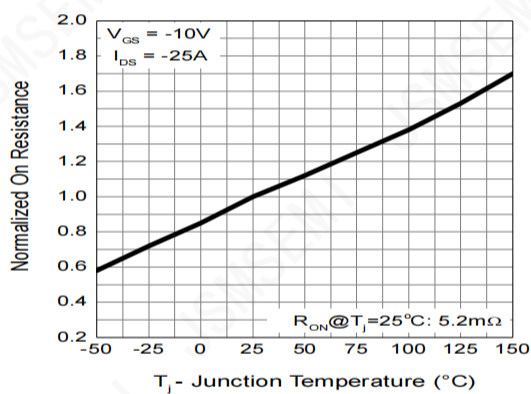
Gate-Source On Resistance



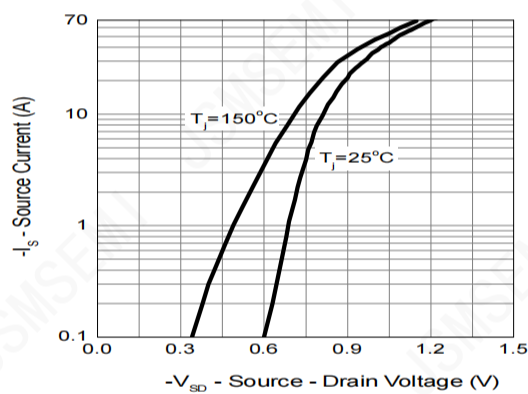
Gate Threshold Voltage



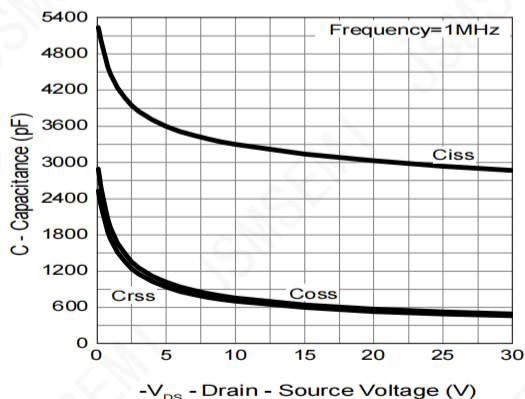
Drain-Source On Resistance



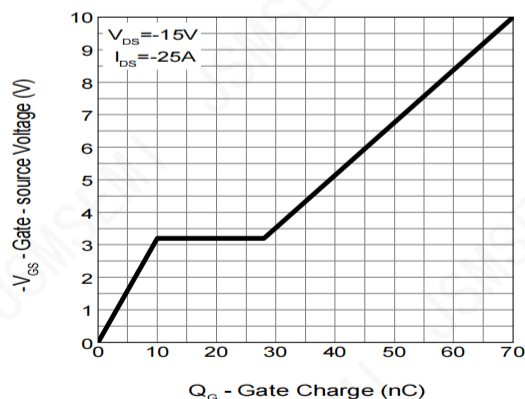
Source-Drain Diode Forward



Capacitance



Gate Charge



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

[illegible]

Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.