



# SPN6435

## Dual N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN6435 is the Dual N-Channel enhancement mode field effect transistors are produced using high cell density DMOS technology. These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance. They can be used in most applications requiring up to 300mA DC and can deliver pulsed currents up to 1.0A. These products are particularly suited for low voltage, low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

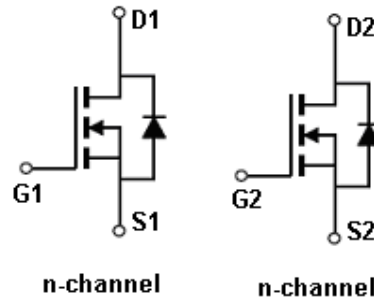
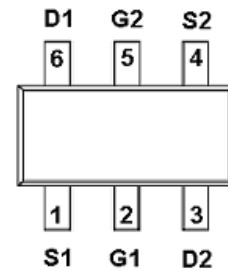
### FEATURES

- ◆ 40V/0.30A ,  $R_{DS(ON)}=4.0\Omega@V_{GS}=10V$
- ◆ 40V/0.20A ,  $R_{DS(ON)}=5.0\Omega@V_{GS}=5.0V$
- ◆ 40V/0.02A ,  $R_{DS(ON)}=10.0\Omega@V_{GS}=2.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-363 package design

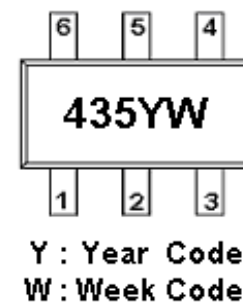
### APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability. Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

### PIN CONFIGURATION ( SOT-363 / SC-70-6L )



### PART MARKING





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### PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	D2	Drain 2
4	S2	Source 2
5	G2	Gate 2
6	D1	Drain1

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN6435S36RGB	SOT-363	435

※ Week Code : A ~ Z ( 1 ~ 26 ) ; a ~ z ( 27 ~ 52 )

※ SPN6435S36RGB : Tape Reel ; Pb – Free ; Halogen – Free

### ABSOLUTE MAXIMUM RATINGS (TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	40	V
Gate –Source Voltage - Continuous	V <sub>GSS</sub>	±20	V
Gate –Source Voltage - Non Repetitive ( t <sub>p</sub> < 50μs)	V <sub>GSS</sub>	±40	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	0.3	A
Pulsed Drain Current (*)	I <sub>DM</sub>	1.0	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	0.3	A
Power Dissipation	P <sub>D</sub>	0.35	W
Operating Junction Temperature	T <sub>J</sub>	-55 ~ 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ 150	°C
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	375	°C/W

(\*) Pulse width limited by safe operating area



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### ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=150\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		1.3	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=32V, V_{GS}=0V$			1	uA
		$V_{DS}=32V, V_{GS}=0V$ $T_J=125^\circ C$			10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.3A$		2.8	4.0	$\Omega$
		$V_{GS}=5V, I_D=0.2A$		3.2	5.0	
		$V_{GS}=2.5V, I_D=0.02A$		7.5	10.0	
Forward Transconductance	$G_{fs(1)}$	$V_{DS}=10V, I_D=0.5A$		0.6		S
Diode Forward Voltage	$V_{SD(1)}$	$V_{GS}=0V, I_S=0.12A$		0.85	1.5	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DD}=30V, I_D=1A,$ $V_{GS}=5V$		1.4	2.0	nC
Gate-Source Charge	$Q_{gs}$			0.8		
Gate-Drain Charge	$Q_{gd}$			0.5		
Input Capacitance	$C_{iss}$	$V_{DS}=25V, f=1MHz,$ $V_{GS}=0$		43		pF
Output Capacitance	$C_{oss}$			20		
Reverse Transfer Capacitance	$C_{rss}$			6		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, I_D=0.5A$ $R_G=4.7\Omega, V_{GS}=4.5V$		5		nS
	$t_r$			15		
Turn-Off Time	$t_{d(off)}$			7		
	$t_f$			8		

(1) Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %.

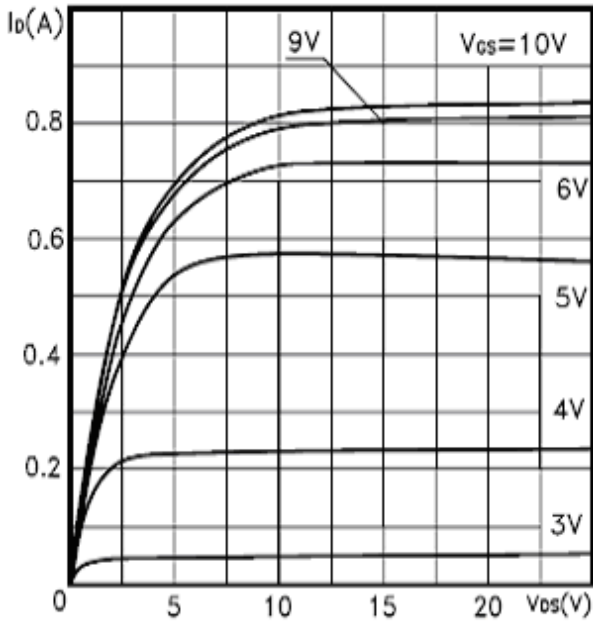
(2) Pulse width limited by safe operating area.



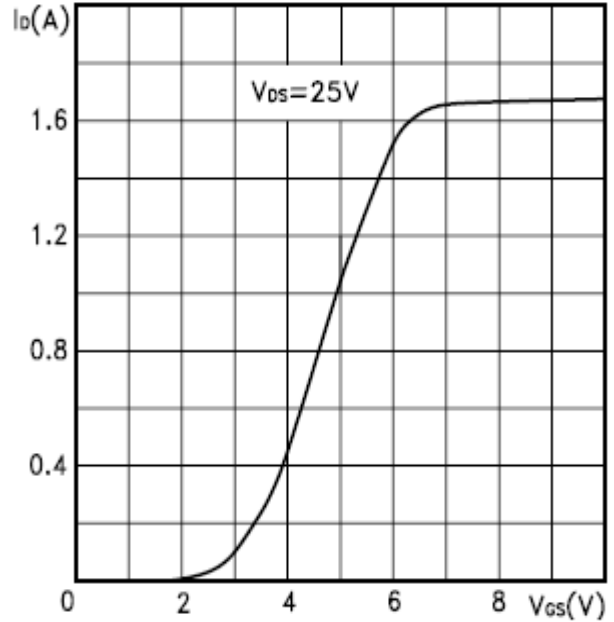
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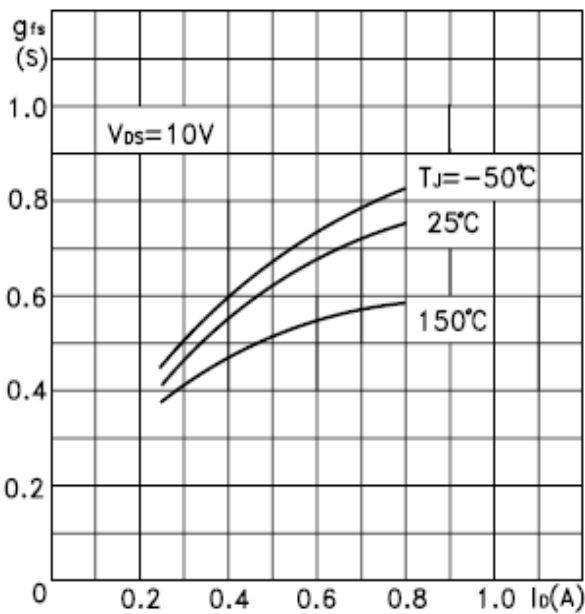
### TYPICAL CHARACTERISTICS



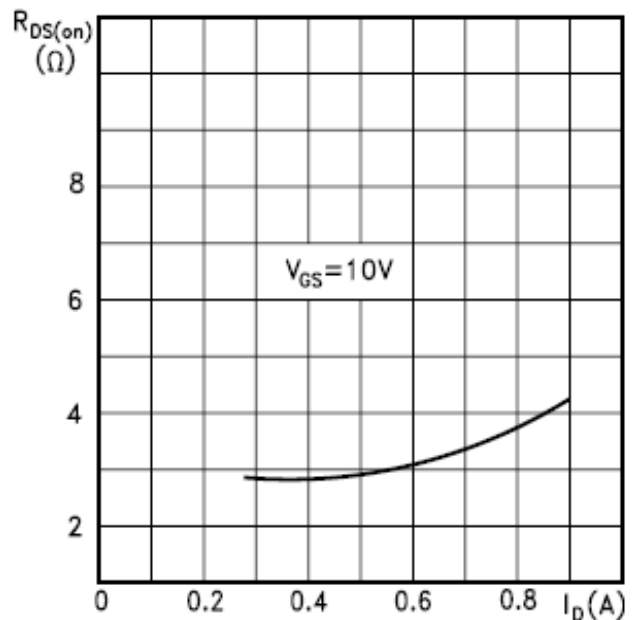
Output Characteristics



Transfer Characteristics



Transconductance



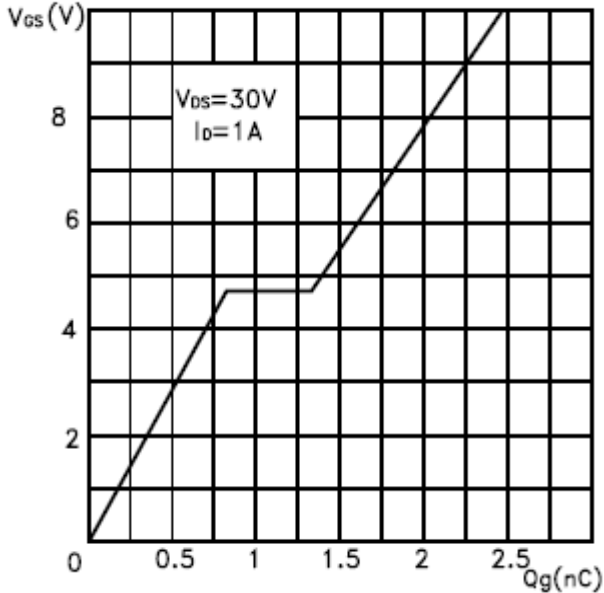
Static Drain-source On Resistance



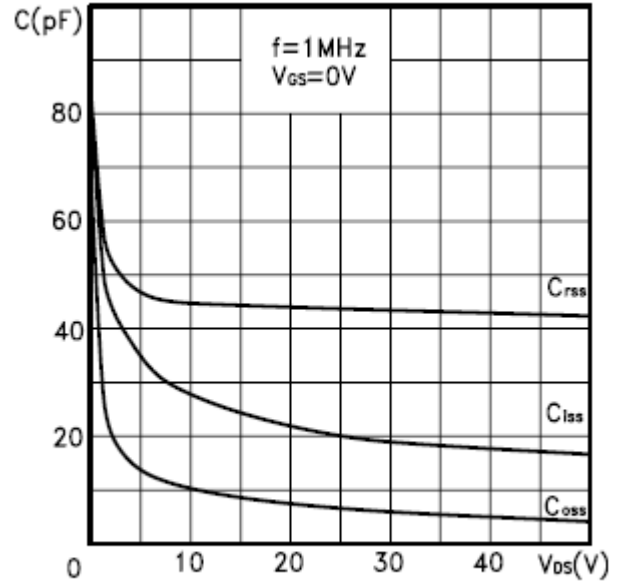
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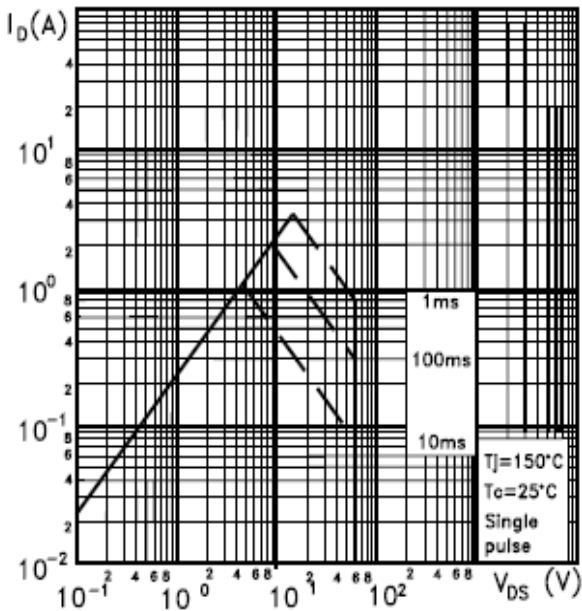
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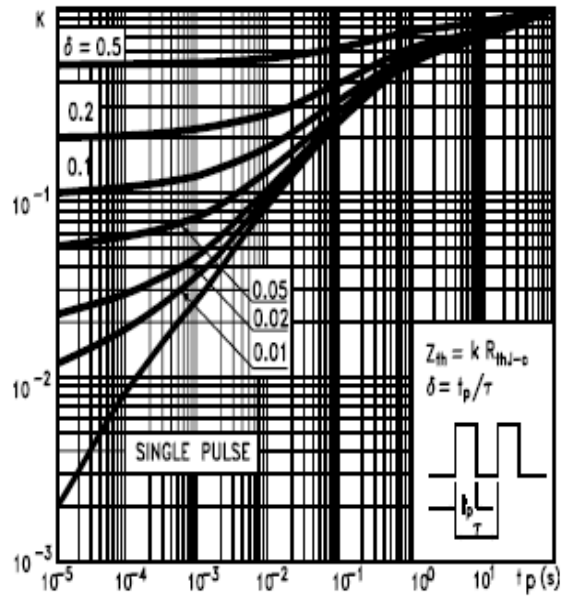
Gate Charge vs Gate-source Voltage



Capacitance Variations



Safe Operating Area



Thermal Impedance



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