



# VEC2616

## Power MOSFET

60V, 3A, 80mΩ, -60V, -2.5A, 137mΩ, Complementary Dual VEC8

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance Nch:  $R_{DS(on)1}=62m\Omega(\text{typ.})$ , Pch:  $R_{DS(on)1}=105m\Omega(\text{typ.})$
- 4V drive
- N-channel MOSFET + P-channel MOSFET
- Halogen free compliance
- Protection diode in

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

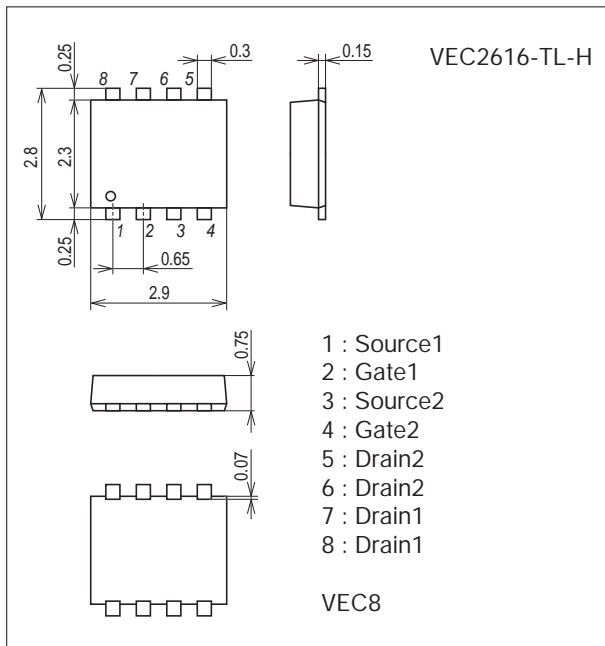
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	-60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	$\pm 20$	V
Drain Current (DC)	$I_D$		3	-2.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	12	-10	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	0.9		W
Total Dissipation	$P_T$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.0		W
Channel Temperature	$T_{ch}$		150		°C
Storage Temperature	$T_{stg}$		-55 to +150		°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

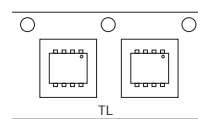
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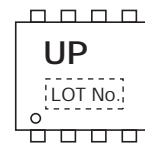
### Product & Package Information

- Package : VEC8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

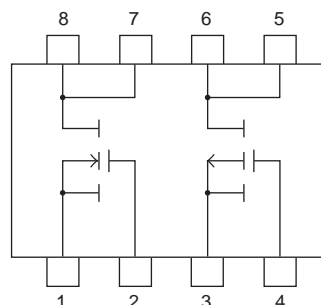
Packing Type : TL



Marking



### Electrical Connection



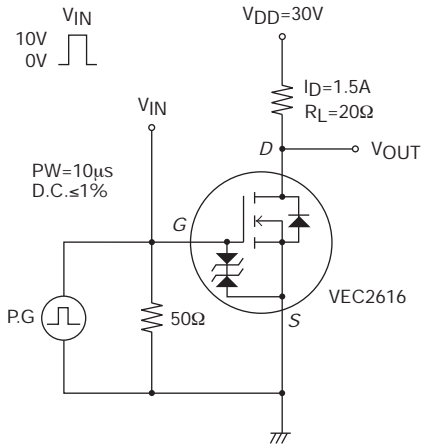
# VEC2616

## Electrical Characteristics at Ta=25°C

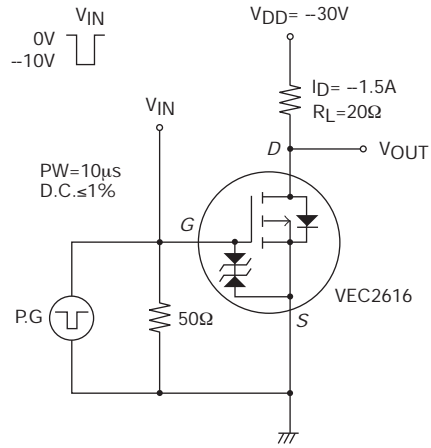
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1.5A		2.6		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1.5A, VGS=10V		62	80	mΩ
	RDS(on)2	ID=0.75A, VGS=4.5V		76	106	mΩ
	RDS(on)3	ID=0.75A, VGS=4V		83	116	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		505		pF
Output Capacitance	Coss			57		pF
Reverse Transfer Capacitance	Crss			37		pF
Turn-ON Delay Time	td(on)		See specified Test Circuit.		7.3	
Rise Time	tr			7.5		ns
Turn-OFF Delay Time	td(off)			41		ns
Fall Time	tf			22		ns
Total Gate Charge	Qg	VDS=30V, VGS=10V, ID=3A			10	
Gate-to-Source Charge	Qgs			1.6		nC
Gate-to-Drain "Miller" Charge	Qgd			2.1		nC
Diode Forward Voltage	VSD	IS=3A, VGS=0V		0.81	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-60V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-1.2		-2.6	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-1.5A		3.9		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-1.5A, VGS=-10V		105	137	mΩ
	RDS(on)2	ID=-0.75A, VGS=-4.5V		128	180	mΩ
	RDS(on)3	ID=-0.75A, VGS=-4V		138	194	mΩ
Input Capacitance	Ciss	VDS=-20V, f=1MHz		420		pF
Output Capacitance	Coss			54		pF
Reverse Transfer Capacitance	Crss			44		pF
Turn-ON Delay Time	td(on)		See specified Test Circuit.		6.4	
Rise Time	tr			9.8		ns
Turn-OFF Delay Time	td(off)			65		ns
Fall Time	tf			36		ns
Total Gate Charge	Qg	VDS=-30V, VGS=-10V, ID=-2.5A			11	
Gate-to-Source Charge	Qgs			1.4		nC
Gate-to-Drain "Miller" Charge	Qgd			2		nC
Diode Forward Voltage	VSD	IS=-2.5A, VGS=0V		-0.83	-1.2	V

Switching Time Test Circuit

[N-channel]

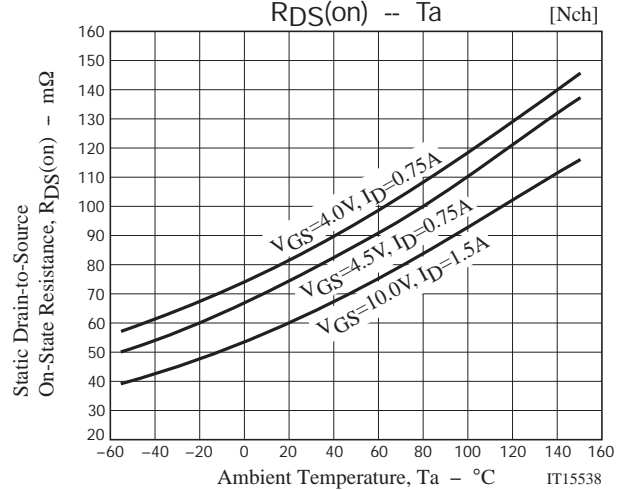
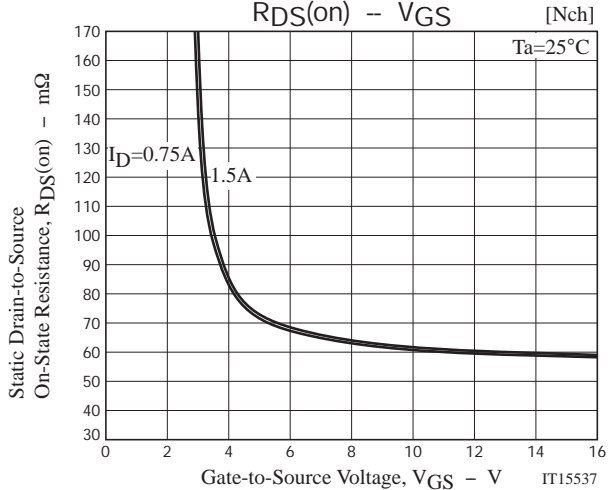
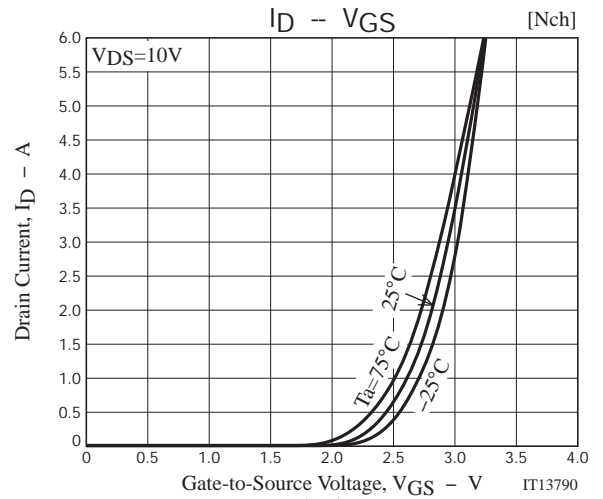
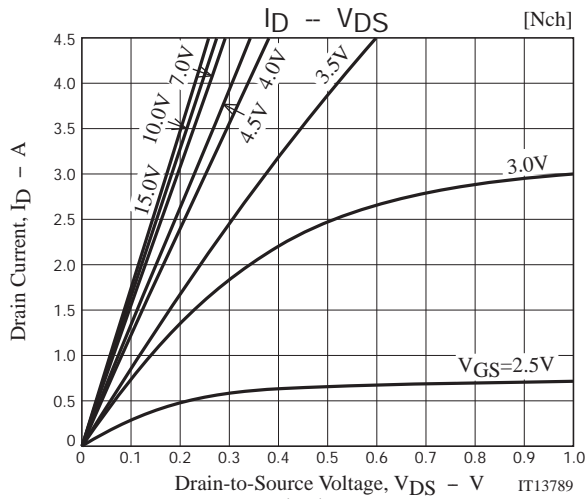


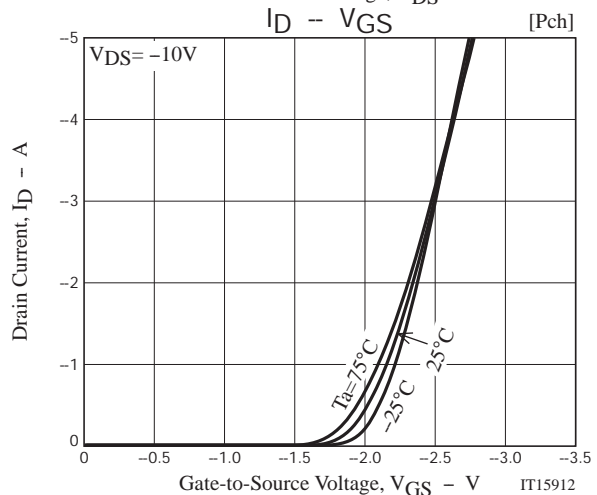
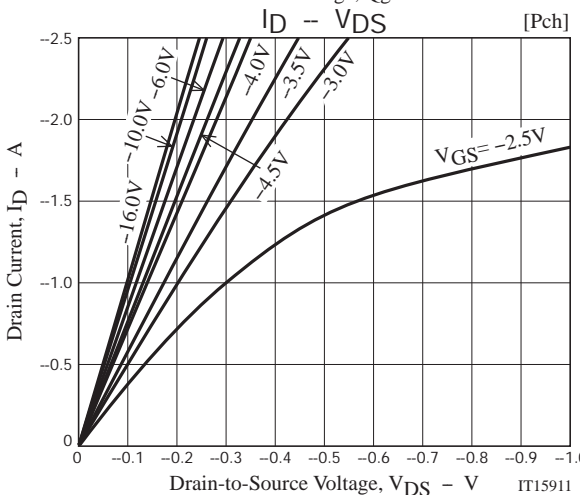
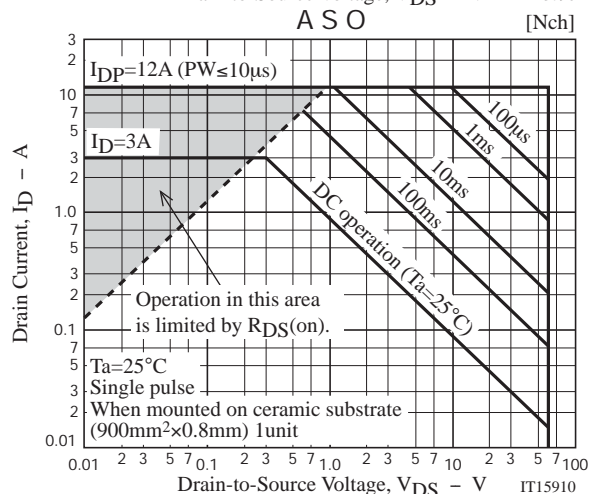
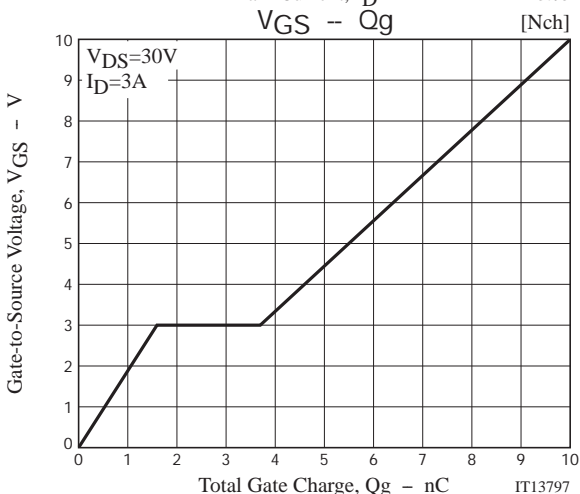
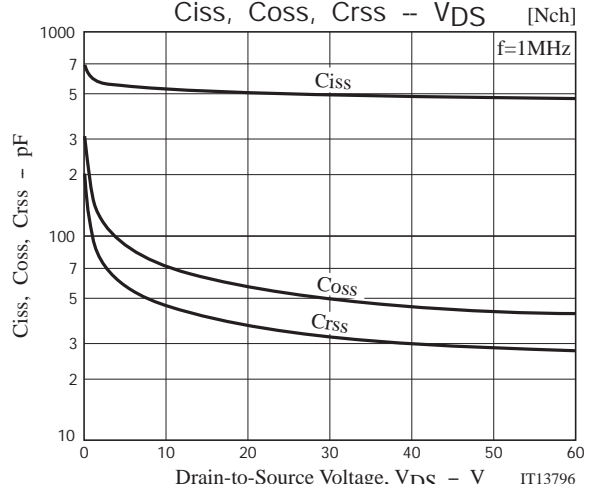
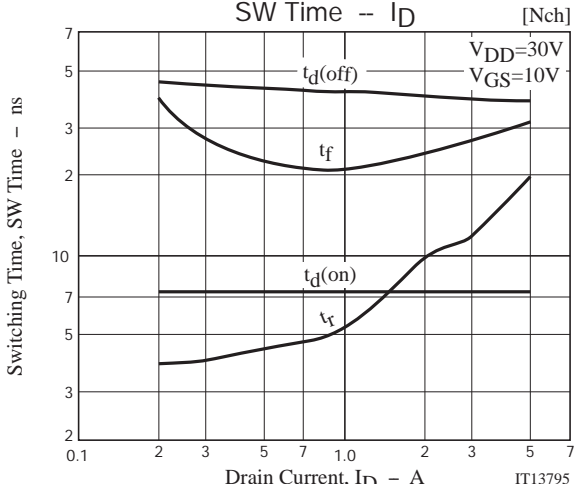
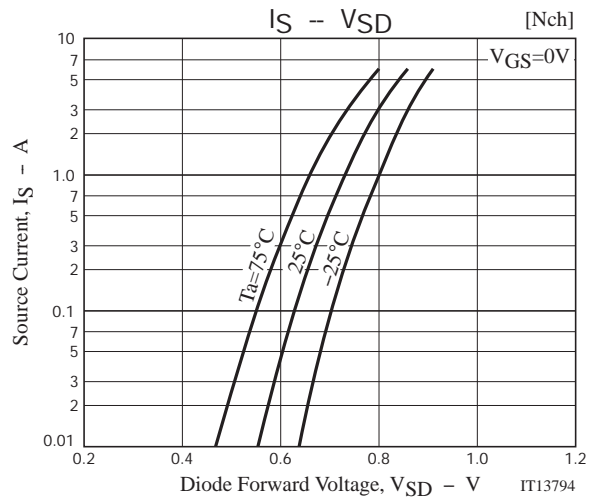
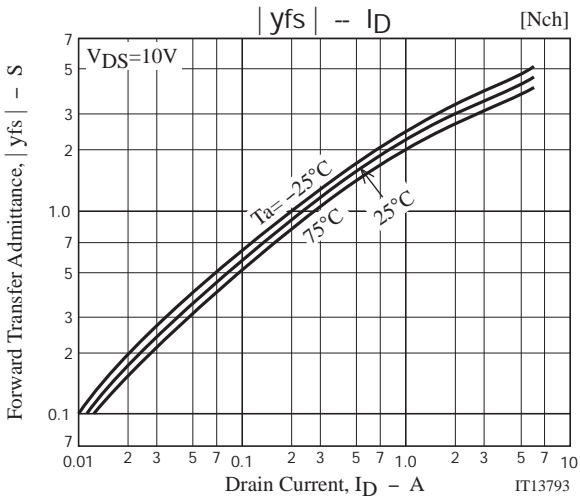
[P-channel]

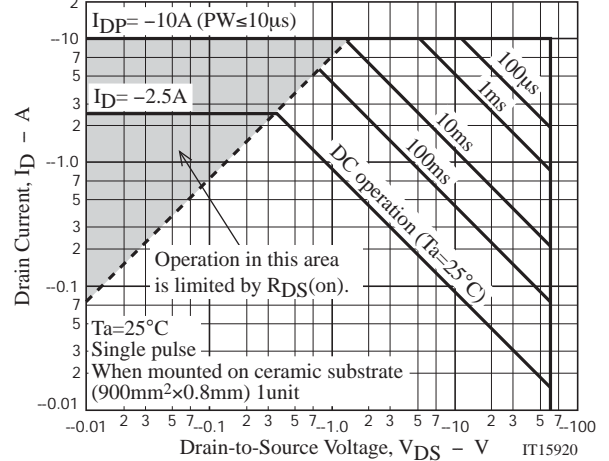
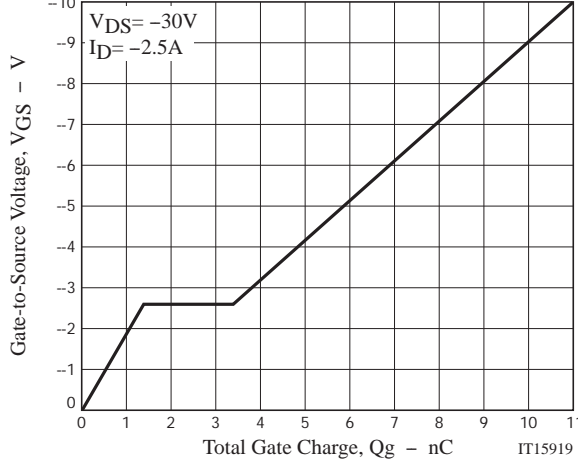
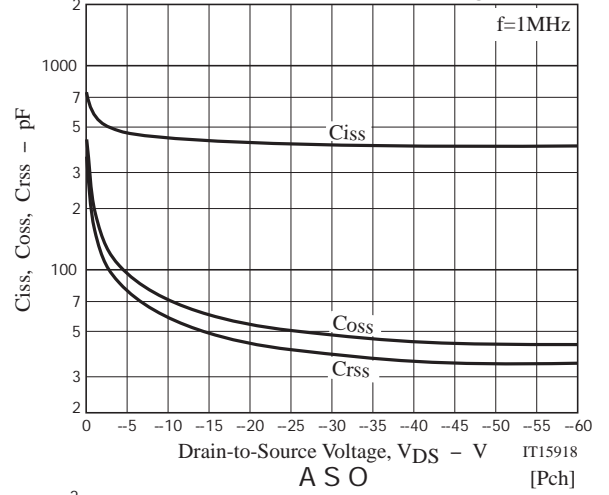
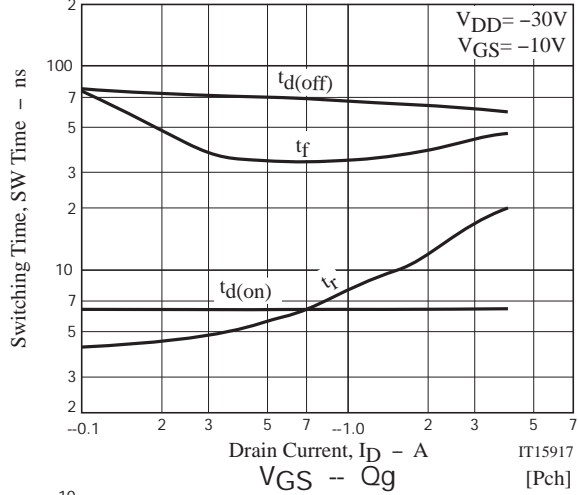
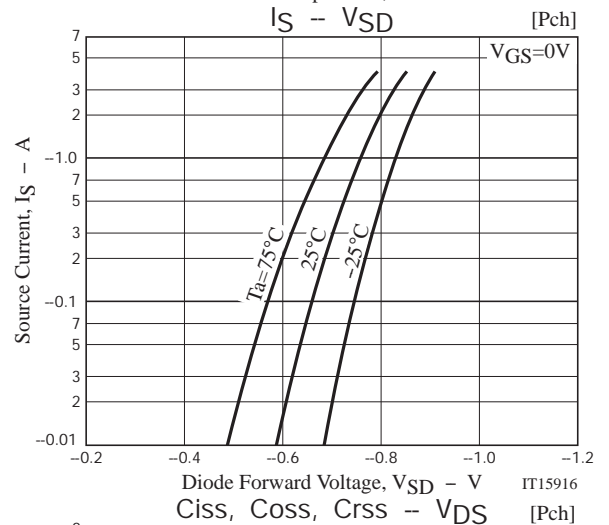
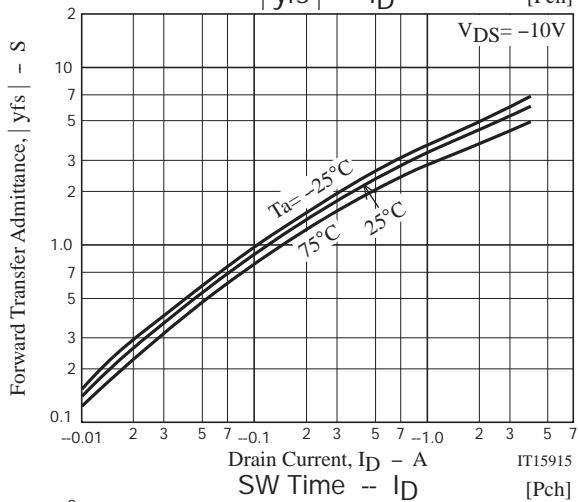
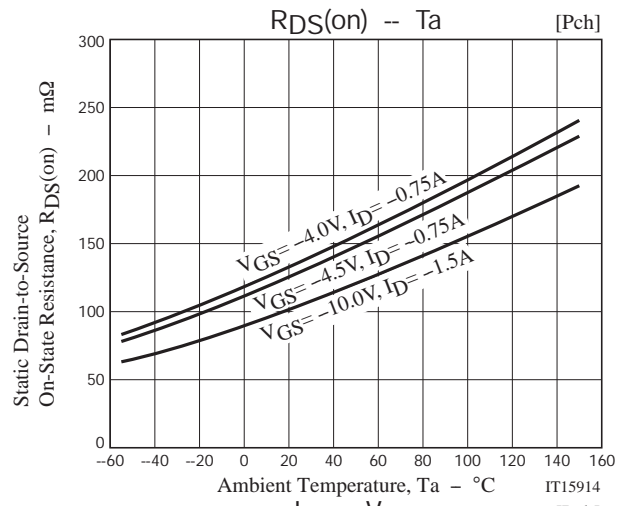
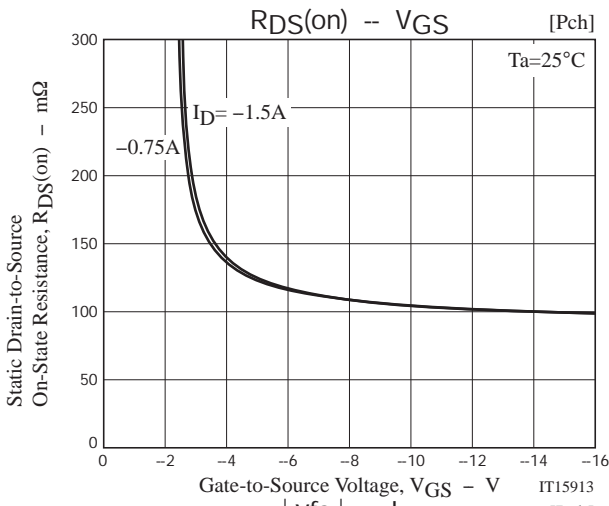


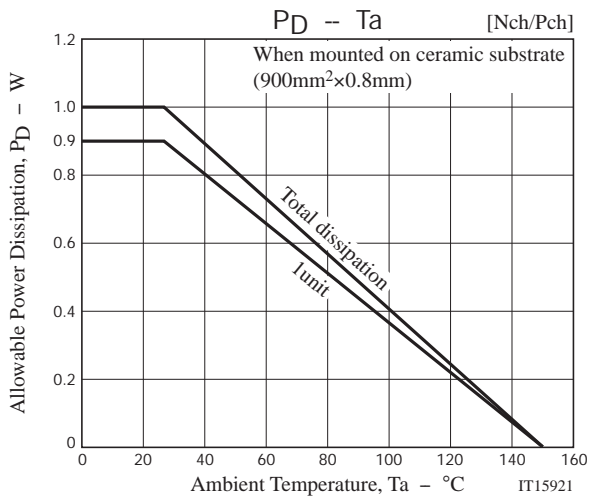
Ordering Information

Device	Package	Shipping	memo
VEC2616-TL-H	VEC8	3,000pcs./reel	Pb Free and Halogen Free









Taping Specification

VEC2616-TL-H

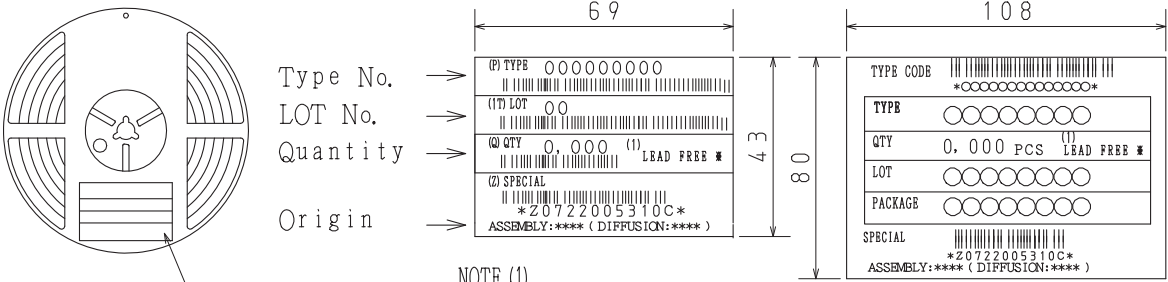
1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
VEC8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method

Reel label, Inner box label (unit:mm)      Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.

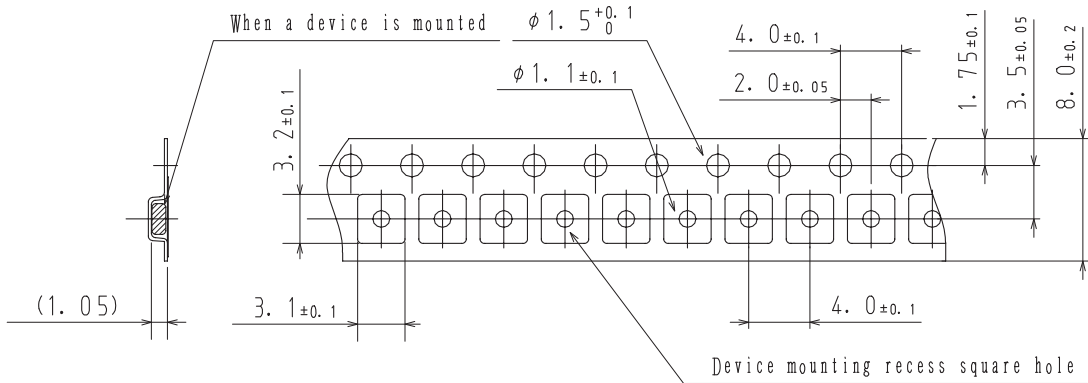


NOTE (1)  
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

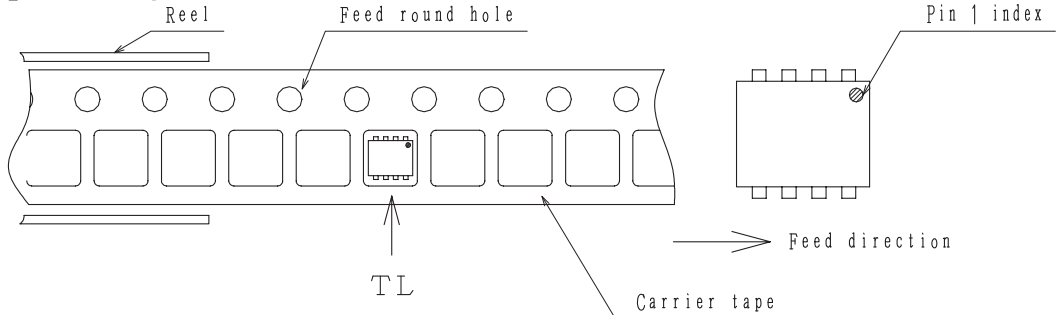
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



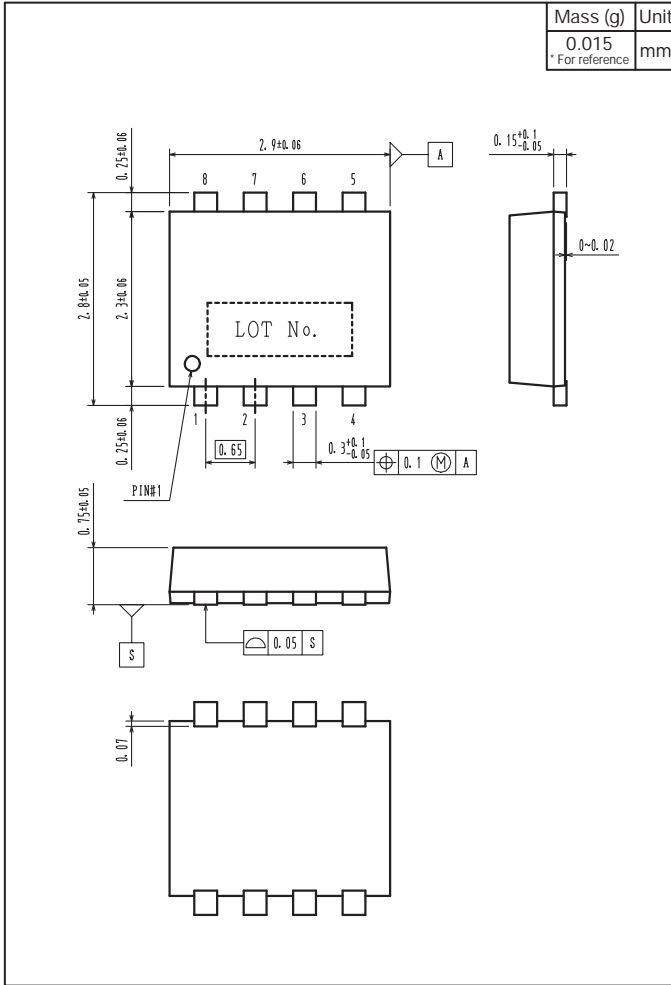
2-2. Device placement direction



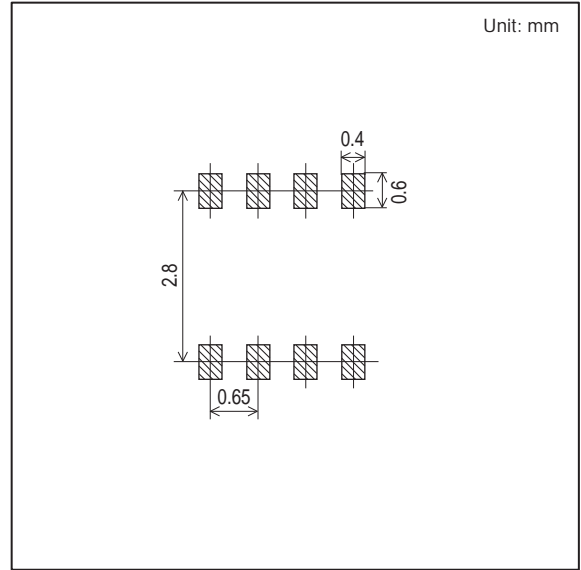
Those with oen electrode terminal on the feed hole side.....TL

# VEC2616

## Outline Drawing VEC2616-TL-H



## Land Pattern Example





Note on usage : Since the VEC2616 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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